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ABSTRACT

Issues and challenges which must be dealt with in the rapidly changing physical education disciplines and professions are discussed. Subjects include overviews of the development of educational philosophies, contemporary problems, and curriculum. Physiological, psychological, administrative, and sociological views are expressed concerning the challenge of change in physical education. (CJ)

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THE ACADEMY PAPERS

ISSUES AND CHALLENGES:
A KALEIDOSCOPE OF CHANGE

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The American Academy of Physical Education

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THE ACADEMY PAPERS

No. 13

ISSUES AND CHALLENGES: A KALEIODOSCOPE OF CHANGE

Fiftieth Annual Meeting, New Orleans, Louisiana

March 13-15, 1979

A Publication of

THE AMERICAN ACADEMY OF PHYSICAL EDUCATION

November, 1979 Washington, DC

Editor

M. GLADYS SCOTT

Academy Seal on the Cover

Designed by

R. TAIT MCKENZIE

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THE AMERICAN ACADEMY OF PHYSICAL EDUCATION

Statement of Purpose

The dual purpose of The American Academy of Physical Education shall be to encourage and promote the study and educational applications of the art and science of human movement and physical activity and to honor by election to its membership persons who have directly or indirectly contributed significantly to the study of and/or application of the art and science of human movement and physical activity.

The Academy shall promote its dual purpose by means of recognizing and encouraging the continued exemplary, scholarly, and professional productivity of its individual members; synthesizing and transmitting knowledge about human movement and physical activity at annual scholarly meetings and via publication of Academy Proceedings; fostering philosophic considerations regarding purposes of and issues and values related to human movement and physical activity; annually bestowing honors for outstanding contributions to the field of physical education.

—APPROVED MARCH 17, 1977

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INTRODUCTION OF THEME

Harold M. Barrow

Recent Academy programs have focused on leadership, accountability, relevance, involvement, realms of meaning, beyond research, a search for interrelationships, and last year, "Future Directions—A Time for Action." We are now in that future and it is time for action. Our future offers mind boggling questions and myriad problems. The solutions will provide an exciting opportunity and impose a demanding responsibility.

The theme for our 1979 Academy Meeting, "Issues and Challenges: A Kaleidoscope of Change," deals with change in the 1980s and the issues and challenges growing out of it both in our discipline and profession. It has been suggested that change, growth and complexity are the three galloping horsemen of modern society (Amara 1976). Because of these apocalyptic threats, new demands are being placed on us to solve problems emerging from them. To meet this challenge, we must analyze change as it occurs, understand its implications and formulate images of the future and anticipate that future. Bronowski in the *Ascent of Man* (1973) states that both art and science are unique human activities and are derived from our ability to visualize the future and represent it in images to ourselves. For us in physical education at this stage, it might not only be image formation but also image renewal.

Academy leaders have always been at the cutting edge of change not only in the art and science of human movement but in society as well. Our past is a litany of positions taken, issues challenged and frontiers explored by industrious and indefatiguable pioneers whose perception of their future was vastly important to them in dealing with the issues of their time. Sometimes I think we need to reflect on the rich legacy they have passed on to us these last 50 years.

The major thrust of papers given at this meeting will be the issues and challenges which must be dealt with in the rapidly changing world of the presenters' subdiscipline or professional component. These papers will be preceded by a paper on the past, present and future of physical education and sport as a scene setting introduction. Two additional papers will focus on the genealogy of Academy members (our *Roots*, if you please) and on the concepts of progress.

It is our hope that the papers will raise questions and provoke discussion, perhaps even uncover issues on which we might, further down the road, want to take a position.

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The President's Address:
TURNING THE CORNER
Marguerite A. Clifton

Turning the corner has more than one meaning for us. We are turning the corner at the end of an interesting decade, the self-serving seventies, and entering new avenues which could mean greater stature for our profession. Will the Academy lead the way?

The phrase "turning the corner" connotes the beginning of a new direction. It becomes symbolic of mobility in regard to professional stature. Despite increasing financial constraints on education, the emotional stress of achieving scholarly productivity and the de-escalation of educational valuing, our profession has struggled with self-identity and has begun to clarify its changing role.

The aging process permits a professional perspective of many decades which leads to the identification of significant catalysts of change in student and faculty behaviors and professional directions. First, there was the sixties, frequently labeled the turbulent sixties. College students of the early 1960s valued education for the utilitarian purpose it served in providing techniques necessary for success in society. Rather than questioning the establishment, there was apathy toward social and political concerns and an accompanying lack of feeling of responsibility.

Military escalation in Vietnam evoked a transition in behavior from near passivity to almost total dissidence. Commitment to job attainment gave way to anti-establishment activity. Sharing the heartaches of many, we observed what was considered the erosion of the foundations of our physical education heritage.

Paralleling these changes was a financial abundance that had dollars flowing into our various programs. Resources seemed endless. The faster you spent, the sooner you received more. Accountability was not yet in the educational lexicon.

Somewhere during this time we slid into the seventies. Through maturational processes, the dissident young people cast off the tantrums and initiated probing questions while devising alternative life styles. Little did we realize that this action would become a powerful catalytic agent in the seventies.

Seemingly endless financial funding of the 1960s had provided the resources needed to match and support the enthusiasm of some faculty who sought to launch new arenas of scientific investigation. Interest in factors of human movement, à la Cassidy, Henry and others, moved from the simmering to the perking stage.

No matter the endeavor of the early seventies, relevance was the key issue and it was strongly reflected in the 1970-71 Academy programs. The theme "Search for Meanings" provided President Harrison Clarke in 1970 with an appropriate platform for raising such questions as: "As an organization of collective Fellows, what has the Academy accomplished in meeting current issues of the day? How has the Academy brought its research expertise, scholarship and experience to bear in proposing solutions to current problems?" (Clarke 1970, p. 71). Little did Harrison realize that his prodding would return to haunt him in 1978-79 when he was asked to develop a position statement on the definition of fitness.

In the succeeding year, the theme "Accountability, Relevance and Involvement" focused on youth's search for personal identification and satisfactions and physical education's role in the governance of colleges, universities and schools and in human ecology. President Ruth Wilson cautioned that "in our search for the identity of our field of inquiry we must be involved with the problems and issues of today" (1971, p. 75).

Academy programs throughout the seventies have represented a response to President Wilson's urging. Examination of human movement was the continuing thread of the program themes. Curriculum models, their meaning and function, and the multi-theoretical construct of physical education were the focus of attention in 1973. The title of the banquet address, "Professorial Posture in the Seventies: Acquiescence or Leadership," related well to President Raymond Weiss' statement in which he cautioned that the Academy talks to itself too much instead of communicating with others (1973). A continuation of the dialogue on the nature of the field of study was reflected in the 1974 program theme "New Focus on Physical Education." President Ann Jewett asked, "Are we an Academy of scholars or an Academy of professionals advocating a new focus on physical education?" (p. 2).

The multifaceted meanings presumed to be inherent in movement were explored in the papers generated by the 1975 program theme "Realms of Meaning." Symbolics, empirics, aesthetics and synnoetics were topics which stretched our thinking far beyond the familiar concerns of administration and curriculum. In his President's message, King McCristal set the stage for the next major focus of Academy programs when he stated, "physical education's body of knowledge is in need of an integrative effort" (1975, p. 3). Subsequently, the 1977 program was planned around the concept of interrelationships among subdisciplines. While the theme reflected our acceptance of subdisciplines in human movement, it also highlighted the potential of fragmentation within and among the subdisciplines. Questions were raised regarding appropriate placement of specialized knowledges at undergraduate and graduate levels and concern was expressed about the need to sequence concepts vertically within each subdiscipline.

In recognition of increased and expanding specializations, the 1978 program focused on future directions. Speakers presented three papers which provided perspectives about the university, the discipline of human movement, and the nature and role of professors in the immediate future. The prospects, while exciting to contemplate, prove challenging to pursue. In emphasizing internal university changes, Uehling (1978) identified, among other factors, changing demographic characteristics. The faculty, described as highly tenured, immobile and increasingly homogeneous, may be on a collision course with students who are characterized as becoming more heterogeneous, older, job-oriented in educational goals, and given to a stop-in/stop-out attendance pattern. This trend is a vexing problem, particularly for less traditional universities, and predictions are for this problem to increase.

In exploring new directions in the discipline, Singer raised these questions:

> Are movement behaviors to become more personalized, expressive, individualized and creative? Are they to become more norm-referenced, scientifically-based, organized and prescribed? What will be their forms and format? How will they be taught by the learned to the learners? What will their message be to observers? (1978, p. 23)

In his discussions of the future directions of the teacher/scholar, Eyler pinpointed a characteristic of many graduate programs which I believe is a crucial problem of our own making and one which is found frequently in university departments and in the Academy itself.

> Instead of a careful balance, the majority of these programs are more professional than academic. Our discipline does not emphasize scholarly and scientific activities to the extent that other disciplines do. Our administrators and faculty have been unable to convince central administrations that a segment of physical education is scholarly and scientific, perhaps because we rarely perform in the same or similar models as do other university scholars/teachers. (1978, p. 30)

The questions and challenges from last year's speakers have strong implications for the Academy. In this decade, we have given the initial shaping and then reshaping of a body of knowledge. Subdisciplines evolving from this effort have become more sharply focused and have generated new knowledge as a result of establishing relationships with other subdisciplines in movement.

A subtle influence on the Academy in the late 1970s has been the emergence of scholars whose educational preparation, teaching and research activities are channeled specifically in one area of a subdiscipline. Their commitment is different from that of generalists. Some of the latter group, through self-initiated retraining, have become specialists. But among the remaining generalists, there are some still insisting that nothing has changed and that we must remain integrated as physical education, health and recreation. Others claim that we have become so highly specialized through subdisciplines that we can no longer communicate effectively with our professional peers. Still others say that the Academy is research-oriented to the exclusion of all else. A practical example of this relates to the workshop discussions engaged in by the Academy Fellows last year in which one session focused on membership selection. Vitae of nominees are so highly specialized now in their publication listings that some Academy Fellows suggested exploring new means of constituting the Membership Committee, and some recognition was given to the need to reconsider the traditional method by which all active Fellows vote on the final slate of nominees. The report of the Implementation Committee this year may contain recommendations for action on some of these ideas.

The emergence of highly structured subdisciplines with able scholars has influenced the Academy in a second and perhaps more significant way. Scholars of common interest have banded together in the seventies no differently than the scholars of the 1920s when R. Tait McKenzie initiated the first meeting of the American Academy of Physical Education. The new subdiscipline groups of the seventies also identify their respective organizations as academies. There is at least one scholarly organization for each specialized area, and even a few which might be considered interdisciplinary within the movement sciences. Most of these groups are program- and project-oriented and provide an essential forum to the development of human movement and to the profession.

What, then, does the Academy represent? Only last year the Fellows of the Academy reaffirmed our status as honorary which, of course, fulfills one of the major purposes, selection for membership annually of the profession's most outstanding persons. Changes in the seventies have mandated a need to modify our concept of what represents scholarly contributions. This might require a change in what is thought to constitute professional leadership. Acceptance by the Fellows of the need to change was confirmed recently in the nature of the contributions represented by all new Fellows honored for election this year. Their research and publication records have influenced the study of human movement, which in itself represents a significant contribution to the leadership of our field.

As an honorary organization representing some of our profession's best thinking, we must be heard! How well I remember my reaction when, as a young faculty member, I listened to an Academy "great" describe the exciting conclusions reached by the Fellows that year. My reaction was "why don't *we*, the rest of the profession, share in this information?" To some extent this information loss has been remedied through the *The Academy Papers*, and most recently, permission for Academy program speakers to publish their papers in other professional journals.

My concern, however, is that we utilize the knowledge of the highly specialized scholars among us to prepare resolutions to problems affecting our profession and society. President Ruth Wilson in 1971 urged Academy Fellows to implement a resolution adopted earlier which would permit the "Academy to take official positions from time to time with regard to critical issues facing education and to make these positions known through appropriate dissemination channels" (p. 77). Judging by the productivity generated by last year's workshop discussions and ensuing action initiated this year, we are closing in on this goal. The Academy's influence, however, will be felt only if we heed the words of 1973 President Ray Weiss:

> the membership must be willing to seek points of agreement among its members and to take a position based on these agreements. . . . It is a time when the membership sets aside its differences. (p. 6)

Significantly President Lou Alley last year reaffirmed the Academy's desire to assume positions on significant issues of the day.

To be effective in the contemporary meaning of academy as it projects beyond the walls of our meetings, we must be assertive. If we turn the corner, let us do it in the tradition of Dr. McKenzie and the Academy giants of earlier decades, *leading* the parade!

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PAST, PRESENT AND FUTURE DEVELOPMENT OF PHYSICAL EDUCATION AND SPORT

Earle F. Zeigler

Physical education is so important to people of all ages in our society that its future in our schools is guaranteed forever—no matter whether true professional status is acquired or not. Nonetheless the current status of physical education is seriously ill. A frightening rift has developed between the people with one or more subdisciplinary orientations and those with a professional orientation—while those who are athletics-oriented continue their merry way toward an open future because of our culture's love affair with highly competitive sport.

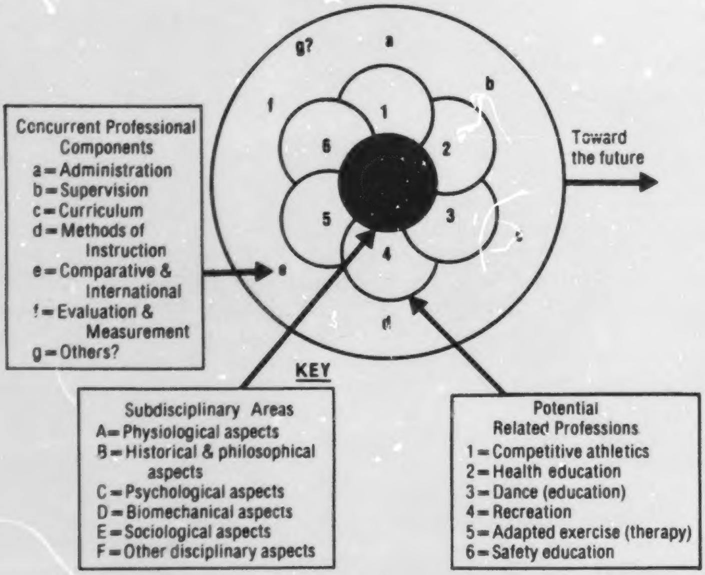
To clarify our present situation, I will relate in four stages what has transpired thus far in the twentieth century. I will then explain what the fifth and future stage must be if we want to preserve our identity and emerge as a true profession. This will be followed by a diagrammatic model for the optimum development of sport and physical activity as a profession.

Stage 1. 1900–1930

During the early part of the century, the subdisciplines, as seen in Figure 1, were blurred and almost indistinguishable within the center of the circle depicting physical education. Professional students of that time studied basic science such as anatomy and physiology, chemistry and physics prior to studying professional physical education courses such as physiology of exercise, kinesiology and anthropometry (Oberlin College 1894). Instruction in academic courses, however, was almost completely lacking. Certain professors had specializations (e.g., Fred Leonard in physical education history and Delphine Hanna in medical gymnastics), but most regarded themselves as physical educators, not as specialists in a disciplinary subject-matter. Of course, we must mention the M.D. phenomenon in the early history. Individuals such as James H. McCurdy, M.D. recognized that our embryonic profession needed people with "scientific ability who will increase our knowledge with reference especially to bodily growth, to personal hygiene, to physiology of exercise, etc." (McCurdy 1901, pp. 311-312).

The writer wishes to express appreciation to Cyril White and Phil Sparling for their helpful advice in the preparation of this paper.

The potential related professions were also blurred and practically indistinct within the center of the circle. For example, in the Wellesley College *Catalogue* for 1910, athletics—which is #1 in Figure 1—is a requirement for the Bachelor of Arts degree in physical education under the heading "Professional Courses" by virtue of a two-hour course in organized sports, a three-hour course in athletics (presumably track and field), and a three and one-half hour course in outdoor games and athletics. Health education (#2 in Figure 1) is included as "Reg. A. B. Hygiene" for one hour and dance (#3) is listed as dancing for one or two hours. Recreation (#4) could conceivably be regarded as *physical* recreation insofar as sport activities were offered within the physical education curriculum. Adapted exercise (therapy) (#5) appears as corrective gymnastics and massage for one hour. The only reference to safety education (#6) is a course experience called "emergencies" for one hour.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Toward the future
Concurrent Professional Components
a = Administration
b = Supervision
c = Curriculum
d = Methods of Instruction
e = Comparative & International
f = Evaluation & Measurement
g = Others?
KEY
Subdisciplinary Areas
A = Physiological aspects
B = Historical & philosophical aspects
C = Psychological aspects
D = Biomechanical aspects
E = Sociological aspects
F = Other disciplinary aspects
Potential Related Professions
1 = Competitive athletics
2 = Health education
3 = Dance (education)
4 = Recreation
5 = Adapted exercise (therapy)
6 = Safety education

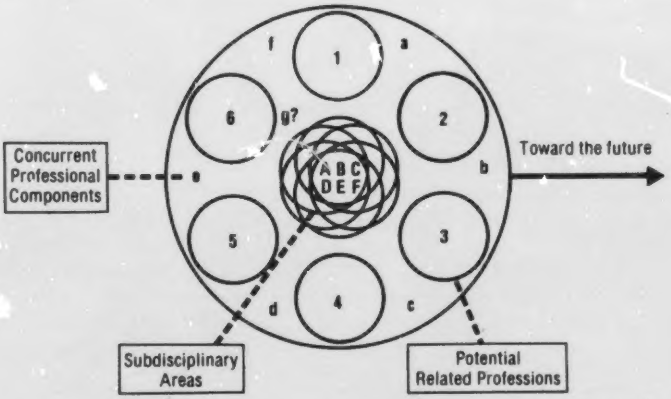
Figure 1. Stage 1—1900-1930.

Stage 2. 1930–1960

During this period considerable change occurred within physical education. The subdisciplines began to emerge from the core. The typical tests and measurements course was gradually characterized by an improved laboratory experience, often largely physical fitness-exercise physiological in nature. These were soon supplemented by motor learning and kinesiological laboratory experiences. There was kinematic analysis of human movement in sport, dance and exercise, but the first doctoral study involving kinetic analysis of movement in sport had not yet been carried out. Sport and physical education sociology had not yet come on the scene, nor had the social psychological analysis of sport and physical activity surfaced to any recognizable extent.

There were a great many historical and biographical theses, but the historical studies rarely used interpretive criteria to evaluate the evidence that had been gathered. The biographical studies were interesting and usually substantive but the subjects of these studies typically emerged with such a large halo around their head that one wondered whether there had been a second coming of the Lord! Philosophical studies were hardly worthy of the name either, although in the mid-forties and the fifties they were similar to studies carried out in educational philosophy (the implications approach, etc.). Occasionally scholars like C. H. McCloy asked how long a field could expect to prosper as a profession when the bulk of its research was conducted through the medium of doctoral study.

A large number of doctoral studies were administrative in nature. Many of these were helpful and provided useful information, but as Spaeth reported, "there is an almost total lack of theoretical orientation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Subdisciplinary Areas
Potential Related Professions

Figure 2. Stage 2—1930-1960. See Figure 1 for explanatory key.

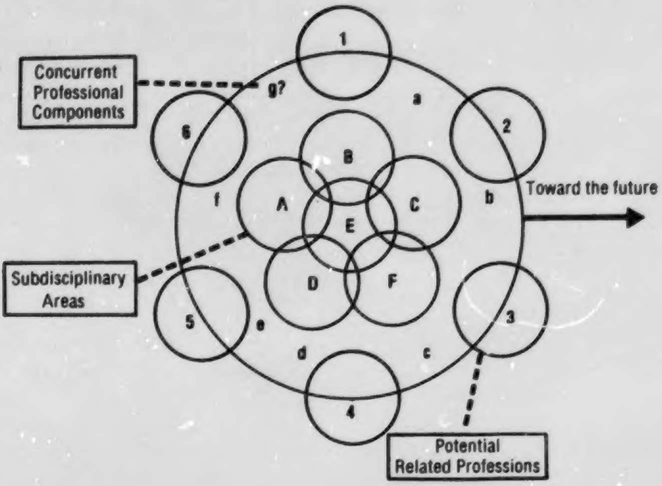
in the design of research and interpretation of the findings in the sample of administrative research studied." She went on to say, "the administrative research in physical education and athletics also generally lacked the methodological rigor necessary for contributions to the development of scientific knowledge about administrative performance" (Spaeth 1975, p. 44). With exceptions, of course, much the same can probably be said for the studies in supervision, curriculum and instruction. These investigations used a variety of techniques under descriptive research methodology. It is often not possible or desirable to emerge from these studies with a coefficient of correlation or a multiple correlation, not to mention a factor analysis technique.

International and comparative sport and physical education research was practically nonexistent from the standpoint of the use of even relatively complex social science methodology and accompanying techniques. Evaluation and measurement was viewed as part of the subdisciplinary efforts of our scholars. It was thereby tied in with those interested in the physiological, psychological and kinesiological aspects of physical education. Today it is viewed more as a tool that can be used by almost any scholar in our field carrying out an investigation in either natural sciences, social sciences or even the humanities.

As to the potential related professions, they moved out of the inner core of physical education during this period and established their own identities. Indeed some even established a separate identity with the field of education, not to mention recognition accorded them by the public.

Stage 3. 1960–1970

In the 1960s, graduate study programs were attacked by Conant and responded to by Esslinger on our behalf. The field developed an incomplete understanding of the need for a substantive body-of-knowledge to undergird its professional efforts. A notable scheme, for example, was the Big Ten Body-of-Knowledge Project conceived by Daniels and followed through to fruition by McCristal and others. The subdisciplines included in this undertaking were sociology of sport and physical education; administrative theory; history, philosophy and comparative physical education and sport; exercise physiology; biomechanics; and motor learning and sports psychology (Zeigler 1975, p. 292). The subdisciplinary areas in Figure 3 are similar, the differences being simply that certain areas are now shown as concurrent professional components. Toward the end of the 1960s the subdisciplines, such as sociology of sport, were moving strongly away from the central core to a position like the one held earlier by the potential related professions, even though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Potential Related Professions

Figure 3. Stage 3—1960-1970. See Figure 1 for explanatory key.

they were essentially unrecognized by the societal entities which they purported to describe, as, for example, sport or sociology.

Examination of Figure 3 shows the potential related professions continuing their movement further away from the central core.

The 1960s also saw the introduction of a more theoretical orientation on the part of a relatively few graduate programs in physical education, and typically the concept of 'supervision' merged more completely with the larger realm of overall administration. Curriculum received more attention and several scholars led the way in giving it, and methods of instruction, a more theoretical orientation. A few professors, reacting to what they considered to be an overemphasis of the subdisciplinary orientation of a relatively small segment of the total population of physical educators in the United States, cast their lot with the professional preparation approach to undergraduate and graduate education in the field. Of course, it could be argued that this was simply an improved and more precise approach to what most colleges and universities had been emphasizing for decades.

Stage 4. 1970–1980

During the 1970s the subdisciplines that were moving strongly away from physical education at the professional conference level continued their direction toward the mother discipline (e.g., sport history and sport philosophy). This trend has continued even though most of the people in these areas received their graduate training in the physical education field—and, where available, received travel funds to attend these professional conferences from physical education units. Although many within the large professional association have been aware of this departure, it has been difficult to know whether to ignore or to try to reverse this development. Recently, for example, a number of discipline "academies" have been initiated within the large professional association. Recognizing the impact of the term "sport," the professional association has established within itself the National Association for Sport and Physical Education. (Most conferences held on other continents, including those with a worldwide orientation, typically employ the word "sport" in their terminology.)

The six potential related professions have consolidated their positions outside physical education departments at college and university levels, although this has not yet been possible officially at other educational levels. The American *Association* for Health, Physical Education and Recreation recognized this independent growth of the related pro-

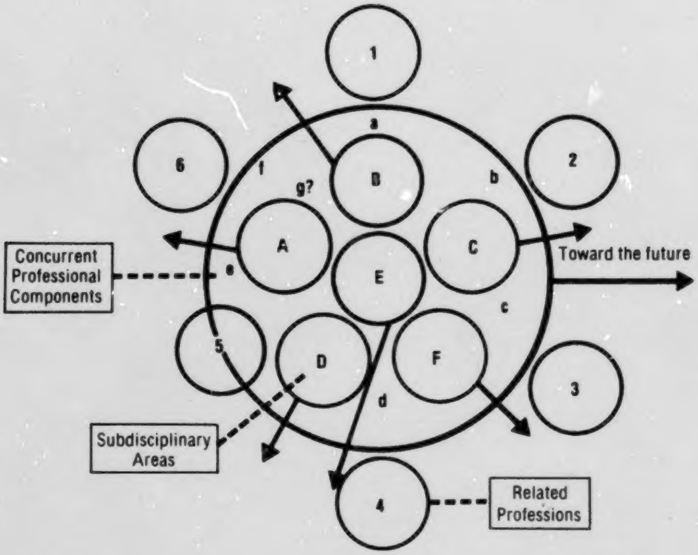


Figure 4. Stage 4—1970-1980. See Figure 1 for explanatory key.

fessions by first changing its name to the American *Alliance* for Health, Physical Education and Recreation and then adding the term "dance" to the Alliance's official title. This action culminates a period in which most of those who identify primarily with the potential related professions, like dance education, have moved or have sought permission to move out of the physical education unit to another entity on campus. They want to be free from what they identify overtly or covertly as the "fizz ed stigma."

There was little change during the 1970s in concurrent professional components. The terms "management" and "administration" began gaining acceptance but there is no evidence that physical education is still yet alert to the need for improving the theoretical and practical components of professional preparation in this aspect of our field. Several universities established sport management streams within physical education curricula at undergraduate and graduate levels. Several other universities, notably the University of Massachusetts, created graduate programs in sport management completely separate from the physical education aegis (i.e., the unit has the name "sport studies," and undergraduate professional preparation in physical education is not required for admission to this program). Massachusetts has a graduate department in professional preparation for physical education separate from the Department of Sport Studies, and at least one other major university has placed special emphasis on professional preparation and instruction methods in physical education. A small stalwart band of curriculum theorists continue to strive for careful investigation into the intricacies of this aspect of professional work. Fortunately for those interested in professional preparation, including curriculum and instructional methodology, universities have continued their drive for improved instruction levels, a move sparked by the clamor of students in the 1960s and perpetuated by a continuing aim to please as well as by financial constraints of the 1970s and the accompanying need to preserve the student head-count.

A small, loyal group has kept the important comparative and international component alive within the Alliance, but the amount of scholarly investigation in this area is so slight that it is not even listed in the Alliance's 1978 completed research publication—truly an indictment of our professional growth at a time when we should be moving toward more, not less, involvement with colleagues abroad.

Measurement and evaluation, formerly known as tests and measurements, is still an important part of undergraduate professional preparation, but it seems to have become diffused at the graduate level into various subdiscipline or professional streams. At least one major university offers it as a graduate level specialization and another major university maintains a measurement and evaluation professor to service students and professors needing advice on research design and statistical techniques.

Stage 5. 1990–2000

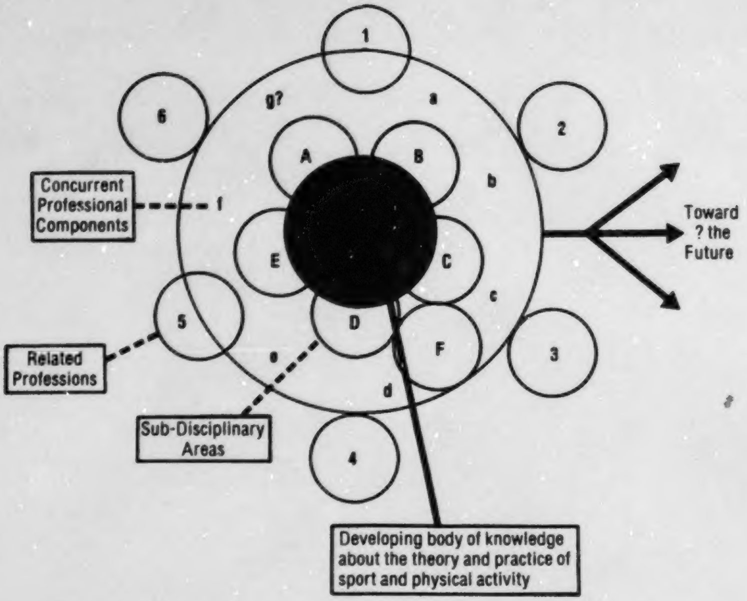
At the beginning of this paper concern was expressed that the physical education field is not moving rapidly enough toward true professional status. Those functioning in public schools probably feel they will be sheltered indefinitely by the teaching profession's protective arm. They and others may believe that society will not recognize that our profession should be the leading force in human motor performance in sport and exercise. Whatever their feelings might be, the fact is we are typically at the bottom of the totem pole in schools despite our unique mission, and we are missing an opportunity to become the profession of which we are capable insofar as societal recognition is concerned.

It is for these reasons that a Stage 5 is postulated here for the field's consideration. If certain vigorous steps were taken by the Academy, the Alliance and the newly formed National Association for Physical Education in Higher Education, the beginning of a trend could become evident by 1990 and clearly recognizable by 2000.

The recommended future development for the profession of sport and physical education—and isn't it time for the Academy to recognize the term "sport" by adding it to its own name?—is explained in Figure 5. You will notice that the subdisciplinary areas, instead of continuing their movement for greater identification with related disciplines, have been brought back within the field of sport and physical activity and are firmly attached to the profession's core—explained as a developing body-of-knowledge about the theory and practice of sport and physical activity. Returning these groups through alliance or affiliation will be difficult but it can be done by means of encouragement, influence and even bribery if necessary.

We must have the intelligentsia working and identifying with us in the Alliance and the Academy. After all, most of them receive their salaries and travel money from physical education units. We need to make clear to them that we want and need every bit of help they can give us to achieve professional status of a higher order. As matters stand now, physical education is a glorified trade with the potential to become a profession when it organizes itself sufficiently to provide its practitioners with tenable theory based on high-level scholarly endeavor.

What about the concurrent professional components? Our task here is to follow the lead of Jewett, Siedentop, Locke, Mosston, Howell,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Concurrent Professional Components
Related Professions
Sub-Disciplinary Areas
Developing body of knowledge about the theory and practice of sport and physical activity
Toward ? the Future

Figure 5. Stage 5—circa 1990-2000. See Figure 1 for explanatory key.

Baumgartner, and Spaeth whose endeavors have placed their respective professional components on a scholarly basis. Because their efforts are vital in achieving professional status, these components have been left importantly within the circle of sport and physical education (Figure 5).

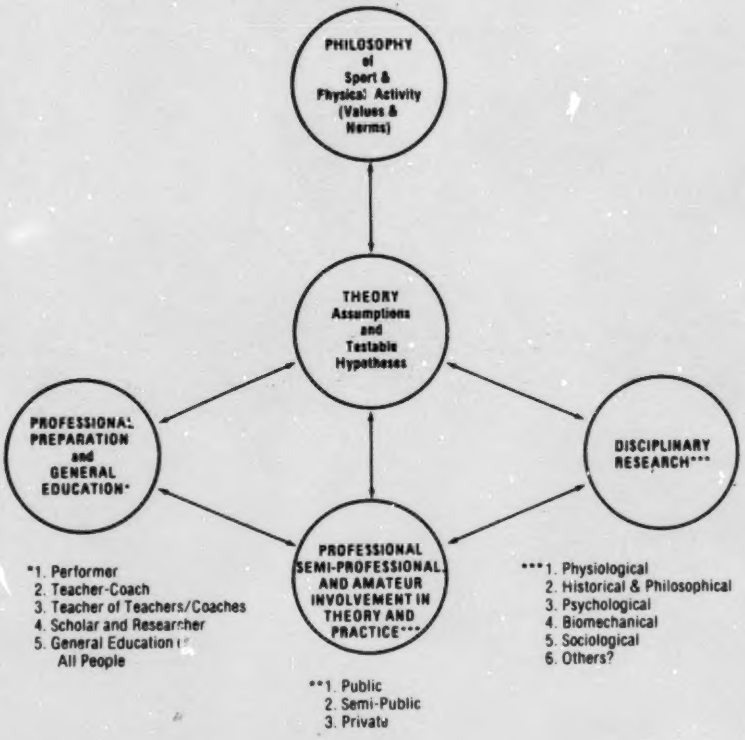
Regarding the continuing problem of our relationship with the (potential) related professions, we have made some progress through the Alliance. To ensure that these professions stay firmly allied to us, we can:

- demonstrate through our actions that we are proud of the role physical education has played in helping them develop their separate professional status
- improve greatly the quality and quantity of scholarly endeavor in the subdisciplines and concurrent professional components
- relate to the scholars in each of these professions where joint research effort can be rewarding.

A Model for Optimum Development of Sport and Physical Activity As a Profession

We have now arrived at the point where it is possible to construct a model for the optimum development of our profession as we move toward the next century. For purposes of argument I have given us the name "sport and physical activity."

The model (Figure 6) includes five subdivisions: professional, semi-professional and amateur involvement in theory and practice; professional preparation and general education; disciplinary research; a


PHILOSOPHY of Sport & Physical Activity (Values & Norms)
THEORY Assumptions and Testable Hypotheses
PROFESSIONAL PREPARATION and GENERAL EDUCATION*
DISCIPLINARY RESEARCH***
PROFESSIONAL SEMI-PROFESSIONAL AND AMATEUR INVOLVEMENT IN THEORY AND PRACTICE**

*1. Performer
2. Teacher-Coach
3. Teacher of Teachers/Coaches
4. Scholar and Researcher
5. General Education of All People

**1. Public
2. Semi-Public
3. Private

***1. Physiological
2. Historical & Philosophical
3. Psychological
4. Biomechanical
5. Sociological
6. Others?

Figure 6. A model for the optimum development of a profession: sport and physical activity, circa 1990-2000. This model assumes the importance of the concurrent professional components.

developing theory embodying assumptions and testable hypotheses; and an operational philosophy.

Professional, semi-professional and amateur involvement in theory and practice is classified further as public, semi-public and private. Professional preparation and general education are categorized as the education of the performer, teacher/coach, teacher of teachers/coaches, scholar/researcher, and all people in the theory and practice of sport and developmental physical activity generally. Disciplinary research includes the physiological; sociological; psychological; biomechanical; historical, philosophical and international aspects of sport and physical activity; and other relatively unexplored subdisciplines such as anthropology.

The assumptions and testable hypotheses of a steadily evolving theory in Figure 6 should comprise a coherent group of general and specific propositions that can be used as principles to explain the phenomena observed in human motor performance in sport and physical activity. The philosophy of sport and physical activity—the values according to which the profession conducts its practice—is based on the sociological theory that society's values and norms will in the final analysis be realized, albeit gradually and unevenly (Zeigler & Spaeth 1975, pp. 407-411; Zeigler 1977, pp. 7-9).

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A PHILOSOPHIC BASIS FOR CURRICULUM CONTENT IN PHYSICAL EDUCATION FOR THE 1980s

Warren P. Fraleigh

There are many trends in physical education and society which will affect our future both positively and negatively. To name a few:

- *Increase in technology*
  Positive effect: greater control and predictability
  Negative effect: alienation of people from a sense of being powerful agents who influence their own lives
- *Continuation of knowledge explosion*
  Positive effect: informing us more completely about what is
  Negative effect: unorganized and unrelated bits of information or highly abstract theory far removed from real life experiences
- *Continued movement toward a leisure society*
  Positive effect: opportunity for more human fulfillment
  Negative effect: meaningless discretionary time
- *Increasing attention to the human body, its needs and expressions*
  Positive effect: establishing the centrality of the body functional to human realization
  Negative effect: a simplistic, indulgent hedonism

What major direction can organize and guide us in our reactions to such trends and their impact potential? What major direction can relate these trends to valuable elements of our heritage that we want to conserve?

A review of physical education literature of the past several decades reveals many articulate professionals suggesting what, in their judgments, *ought* to be primary emphases in physical education. Upon analysis we find that these emphases are fostered by three factors: those things which are believed to be possible in physical education, issues which appear to be particularly important in relation to current societal problems, and topics which rank at the highest priority among the professionals proposing them. Two examples:

- Physical fitness was judged as the primary emphasis in the early 1960s by several professionals. This emphasis was in accord with the national concern for fitness raised by the Kennedys and by the comparative results of the Kraus-Weber tests. Advocates were often exercise physiology specialists or devotees of personal exercise.

- Some professionals judged self-knowledge and self-actualization as primary emphases in the late 1960s and the 1970s. This emphasis was consistent with the popularization of humanistic, third force psychology and with the changes of consciousness generated by the student movement and the Vietnam war. Advocates were often involved in the study of humanistic psychology.

In these advocacies, emphasis was raised to a priority level which, when scrutinized historically, indicates a measure of myopia. Myopic advocacy by professionals is indicative of at least three tendencies. First, we are subject to the enthusiastic emphasis upon meeting the latest and most publicized societal concern. Second, myopic advocacy usually promotes something which is important, although not exclusively so when all possibilities are considered. Third, most of us like to have our own professional competency and interest areas raised to a priority level because it elevates our own sense of self-importance.

Perhaps we need a sense of direction which helps us view our own favorite priorities and the latest societal emphasis in a wider context. It is suggested that such sense of direction is contained in a stated aim of the school curriculum and physical education curriculum. Macdonald calls the basic aim of education "the most fundamental educational value commitment." He believes there are three primary educational value commitments or aims:

> - Socialization, as an aim relates to the training potential of schooling. It is the acceptance of the status-quo by definition and the replication of the present social class and role structure, ethos, and attitudinal sets by the most efficient and effective methods possible.
> - The explicit or implicit goal or aim of education has been proposed as human development—specifically, the development of the individual.
> - A third general aim, often embedded in a developmental position, is more adequately called liberation . . . essentially, it is an aim of freeing persons from the parochialness of their specific times and places and opening up the possibilities for persons to create themselves and their societies. (1977, pp. 16–17)

The second and third aims can be combined, resulting in the proposition that the *aim of the curriculum is the development of the individual for the purpose of his/her liberation.* There are several lines of reasoning supporting this view. Briefly, some are:

- In the United States there is a value commitment to the supremacy of the individual with institutions viewed as the servants of humans.
- There is a long tradition in the West of viewing human beings as capable of choice and having the potential to live a free life.

- The recent focus on humanistic education as a palliative to alienation in an industrial-technological society places relevant contemporary emphasis on individual development for liberation.
- Negatively viewed, socialization, as the primary aim, places too great an emphasis upon what is and has been in this world of rapid change and in a society with pluralistic values. Also, some socialization emphasis is inevitable in the educational system of any society.

Adopting as the aim of the curriculum the development of the individual for the purpose of liberation avoids myopic emphasis and organizes appropriate emphases in coherent relation to a fundamental value commitment. Appropriate emphases, understood as developmental objectives, are given a different meaning in relationship to one another when unified in relation to the value of liberation. Each is understood as being of equal qualitative importance in pursuing the primary value of liberation but not as standing in a priority relationship to the others. Thus, the varying developmental objectives of the physical education curriculum are not worthy in themselves but are good because their accomplishment aids in moving toward the liberation of the individual.

Let us explore six developmental objectives for physical education, the kinds of curriculum content appropriate for each and the relationships of each objective to the value of liberation.

Development of Skills in Human Movement

Development of skills in sport, dance and exercise is good because it allows a person to make a team, form social relationships with others, increase self-confidence, use leisure time, etc. However, the primary value of skill is broader and more significant. My colleague Scott Kretchmar says it well:

> the skilled body is the "*body functional.*" It "carries" the individual beyond him or herself. It is an avenue of new relationships with the world.
>
> Gains in body education are recognized by sensing increased temporal-spatial opportunity. More paths of activity are available. Aspects of the world are more interesting, richer, more impelling relative to possible engagement with them. Parts of the environment "come alive." A mountain becomes that which can be climbed; a pantomime can be acted out; a distance can be traversed; a sport challenge can be accepted; a given duration of work can be lived. And with this increased richness of the world, the body remains, as it were, in the background as a lived access, as a source of dominion. The paradox is clear. When the body is educated, it is often forgotten. (1973, p. 11)

Development of performance skills liberates individuals *from* the constant demands of gravity, advancing age, personal reticence, social or sex-related stereotyping and frees them *for* expanded modes of contact with the world. It allows them the possibility of choice to participate or not (and there is no freedom without choice). Skill development to the level of expertise liberates the individual to the possibility of creative challenges and experiences of new techniques and strategies.

There are many ways of establishing categories for the curricular content relevant to skill development. Categorization is relevant because effective skill development in each category would contribute markedly to bodily liberation. The categories are:

- *Movement environments* such as air, land and water in which skillful movements are performed in essentially different mediums. Performing skilled actions of sport, dance and exercise in such different environments liberates the individual by making each environment a friendly, non-threatening situation in which the person is comfortable. Since performance in each medium requires different skills, the individual is freed *from* discomfort, and freed *for* effective performance, in any movement environment.
- *The focus of consciousness of the mover* such as on the body, on external objects to be moved or on the form created by the movement. Performing movements where the mover's consciousness is focused in each of these three ways provides the ability to "center" one's consciousness in various effective movements, thus freeing the individual from only one kind of "centering."
- *Development of advanced performance skill* in one or more varieties of sport, dance or exercise. Effective performance of highly skilled actions frees individuals from the conventional, thus freeing them for creative actions. It also liberates them by providing the direct experience of the unification of consciousness with movement as contrasted with the experience of separation or splitting of consciousness and movement. In such experience the individual knows the unified self as a free unity.

Development of an Adequate Physical Basis for Effective Movement

An adequate physical basis promotes efficient circulorespiratory functioning, enhances recovery from illness, contributes to weight control and establishes a healthy citizenry. Again, each of these is good but none speaks totally to the liberating benefit that helps make the world come alive in terms of potential activities for individuals. A long hike through the woods at an outing becomes an invitation rather than a threat, playing backyard volleyball or a soccer match with the kids becomes fun rather than an obligation, even shoveling snow becomes a real possibility for a different relation with the world. The individual with an adequate physical basis knows that the constantly tired and bored body feeling common among sedentary people is not the way it has to be or ought to be. Such an individual is liberated "to be the author of his own actions and not merely a reacting victim or passive spectator" (Kretchmar 1973, p. 11).

The appropriate minimal categories for this developmental objective, when we consider skill development separately, include cardiorespiratory endurance, muscular strength and endurance, and body flexibility.

Acquisition of Technical Knowledge of Human Movement

Development of technical knowledge in sports, dance and exercise is essential to participation, and participation is essential to move toward the liberation associated with skills development and an adequate physical basis.

In sport, appropriate categories of technical knowledge are rules, terminology, strategies, playing and spectating courtesies and information on the hallmarks of quality equipment, supplies and apparel.

For dance, knowledge of terminology, rhythmic patterns, basic types of dance and musical accompaniment are some categories.

For exercise, knowledge of terminology, specific effects of specific exercise patterns, safety precautions and routines and information on quality equipment and apparel are all appropriate.

Acquisition of Knowledge of the Biological, Economic, Historic, Psychological and Sociological Aspects of Human Movement

There has been considerable reluctance in physical education to include such knowledge. In terms of moving toward the value of individual liberation this is unfortunate because such essential knowledge frees individuals from ignorance about sport, dance and exercise in human life. It also provides the knowledge they need to make informed decisions about their own participation and that of their children and relatives, in sport, dance and exercise and about the appropriateness, or inappropriateness, of institutionally sponsored programs of sport, dance and exercise. Without such knowledge individuals are shackled by the hucksterism of commercial enterprise, subjected to the pressure of contemporary fads in sport, dance and exercise and victimized by conventional, often inaccurate, information. Developments of the past two decades have increased the quantity and quality of this kind of knowledge. With no attempt to identify major topics or their curricular organization or instructional delivery, the following categories of knowledge appear to be appropriate:

> Principal effects of sport, dance and exercise upon human biological growth and development and the general principles of exercise physiology.
>
> Principal effects of sport, dance and exercise upon human psychological growth and development and the basic psychology of human voluntary physical activity.
>
> Reciprocal effects of sport, dance and exercise upon important human institutions such as education, politics, religion and the family.
>
> Economic impact of sport, dance and exercise in contemporary society and comparisons with the past and projections to the future.
>
> Diverse functions of sport, dance and exercise in varying cultures in history.

Acquisition of Self-knowledge in Movement

Participation in sport, dance and exercise is a natural way of attaining clearer self-understanding, an attainment intimately related to liberation. Insofar as the experience of self in sport, dance and exercise provides a more accurate picture of an individual's personality, it helps liberate an individual from positive or negative illusions which, in turn, frees the individual to relate more effectively to his/her own reality.

The liberation available through self-knowledge is generally discussed as a direct outgrowth of the experience of sport, dance and exercise. Nonetheless, curricular planning can provide structured activity in which individuals reflect on and interpret the experience of self. Categories which might be used in reflection upon experience of self in sport, dance and exercise are: the self as competitive and cooperative, the self as aggressive and submissive, the self as an individual and as a member of a group, the self as violent and tender, and the self as adequate and as inadequate.

Development in Making Ethical Decisions Regarding Movement

The ability to make ethical decisions frees individuals from the limited perspective of conventional and self-interested thinking which, in turn, allows freedom for being a true moral agent.

The literature of physical education has asserted for decades that participation in sport, dance and exercise is a fertile ground for developing participants' ethical character. This assertion is correct insofar as it indicates that there are many experiences in sport, dance and exercise which have great potential for ethical examination. It is incorrect insofar as it indicates that we are doing this task adequately—we are not. To do so requires the physical education curriculum to pay explicit attention to such content as moral criteria of action in sport, dance and exercise, develop procedures for ethical decision making and make an examination of actual situations in sport, dance and exercise to which the criteria and procedures can be applied.

Conclusion

Each of the developmental objectives has been discussed in its relationship to the primary value commitment of liberation of the person. Such liberation has two facets—liberation *from* unnecessary barriers to fuller human realization, and liberation *for* engagement with the world in the self-chosen actions of sport, dance and exercise. Such self-choice is made by persons who understand in a very personal, non-abstract way the intrinsic satisfactions and meaning of such engagement. Such personal understanding is influenced by attaining the developmental objectives but is secured by the realization of a freedom that dares to go all out and focus all of one's energies on a self-chosen task (Metheny 1972). Perhaps such realization might also be influenced by physical educators who view the movement forms of sport, dance and exercise as having the intrinsic value of liberation rather than the instrumental values we have so often used to justify participation.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: PHYSIOLOGICAL VIEW

Jack H. Wilmore

Professional Opportunities

Historically, most undergraduate and graduate majors in physical education have entered the teaching profession once they have obtained their terminal degree, with only a small percentage seeking employment in related areas. Over the past five years there has been a dramatic shift in the supply to demand ratio for teaching positions. Declining enrollment at all education levels coupled with an increase or leveling off of physical education graduates each year has resulted in an oversupply of candidates for the educational marketplace. Many well-qualified graduates are unable to secure employment in their field. We have to take a critical look at our role as supplier. Are we under a moral obligation to our students to limit enrollment in our programs to assure a balance between supply and demand or are other alternatives available?

One of the more exciting developments in the physiology area during the past five years has been the increased opportunities for employment of qualified and properly trained physical education graduates in health-related professions. Our country is enjoying a renewed interest in physical fitness which is reaching proportions never before seen. Intricately associated with this emphasis is a better understanding and awareness of the health-related benefits of an active lifestyle. Jogging, racketball, tennis, bicycling and swimming have experienced dramatic increases in participants, and other sports or activities are also enjoying increasing popularity. This trend has opened two major avenues for employment for the physical education graduate with training in exercise physiology.

Employment opportunities are excellent in recreation and fitness programs. Community-based agencies, YMCAs, YWCAs, Jewish Community Centers, and park and recreation departments are recognizing the need to keep up with the times and are beginning to hire individuals qualified to organize and administer programs that will provide health-related benefits. Health spas are beginning to alter their traditional emphasis, and are now frequently referred to as fitness centers. With most major spas now supporting their own national organization, the Association of Physical Fitness Centers, they are focusing their resources on family fitness. Many fitness centers are contracting with local physicians or community medical facilities to provide complete medical evaluations for their clientele prior to enrolling them into their programs.

Physical education graduates with backgrounds in exercise physiology are being employed to assist with the initial screening process as well as develop individualized exercise programs and supervise and monitor exercise sessions. Many major businesses have become convinced of the benefits of exercise for employee health and have established in-house fitness centers staffed by individuals trained in exercise physiology.

Employment opportunities are also being expanded in preventive and rehabilitative medicine. Private physicians and group practices are initiating preventive medicine programs where individuals trained in exercise physiology administer test batteries—including graded exercise testing for detecting myocardial ischemia and body composition assessments to determine more accurately optimal body weight—to define patients' health status. The results of these tests are used to prescribe exercise and dietary regimens and influence change in habits detrimental to good health. The basis for these programs rests on the still to be proven theory that changes in lifestyle will alter the course of chronic degenerative disease, either delaying or preventing the appearance of the outward manifestations of the disease. Since cardiovascular disease is the major cause of death in the United States today, responsible for more deaths (53%) than all other causes of death combined, the focus of most of these programs is on cardiovascular disease, and more specifically, coronary artery disease. Consequently, lifestyle changes that are promoted include dietary management of total calories for weight control, fat intake for cholesterol levels and salt intake for control of hypertension; cessation of smoking; reduction in stress and anxiety; and increased physical activity. These popular programs are expanding rapidly. In addition to the private medical sector, these programs are being initiated by community hospitals, colleges and universities and through commercial concerns. This movement is providing job opportunities for those trained in exercise physiology and at salaries equal to, if not in excess of, those offered in teaching. Starting annual salaries range between $12,000 and $20,000, depending on educational background and experience.

Closely related to the above are increasing opportunities for those trained in exercise physiology in rehabilitative medicine. Many hospitals and community-based agencies have initiated exercise programs for patients recovering from various diseases. Cardiac rehabilitation programs for post-myocardial infarction and post-coronary bypass surgery patients have been the most widely established to date. However, programs are beginning to be established for patients with chronic lung disease, those with severe orthopedic disabilities, and other selected patient groups. The reality of having third party coverage (insurance carriers) to underwrite the majority of costs associated with such programs has made these programs economically feasible and has created job opportunities for exercise specialists and exercise technicians.

Many professional athletic teams hire full-time or part-time exercise physiology consultants. At the collegiate level it is not unusual to have a full-time person devoted to the conditioning of athletes. The application of science to the testing, conditioning and training of athletes is a rapidly growing area, thanks in part to the improved performance of East German and Russian athletes, who attributed their success to scientific process. In this country we have been slow to bridge the widening gap between the exercise scientist and the sport practitioner. Over the past decade, however, exercise scientists have increasingly focused their research on more applied topics, as exemplified by the work of Charles M. Tipton (University of Iowa) with wrestlers and David L. Costill (Ball State University) with long distance runners. Sport practitioners have thus become better educated and are beginning to ask appropriate questions, questions demanding a response from exercise scientists.

This new alliance between scientist and practitioner has provided greater employment opportunities for those trained in exercise sciences. Individuals are being employed to conduct athletic performance evaluation testing batteries; to design conditioning programs that are individualized for the athlete in a specific sport; to assist in resolving problems which arise in performing the sport or activity, e.g., fluid replacement solutions and schedules of replacement; and to assist in resolving problems associated with injury prevention and rehabilitation, e.g., identifying injury-prone athletes and utilizing recent research in muscle histology and biochemistry to prescribe a reconditioning program for postoperative athletes.

The above areas of potential employment represent only those areas which have undergone significant development over the past decade. Because these areas may employ a substantial number of our graduates over the next decade, research educational programs must be sensitive to these new emphases and plans for orderly change must be initiated immediately.

Research

Research in exercise physiology must be directed toward gaining an understanding of basic mechanisms. Our research literature has become inundated with purely descriptive studies. Although this research has provided tremendous insights into more basic research, it quickly reaches a point of diminishing returns. As one example, it has become a popular trend to conduct detailed physiological evaluations of various athletic populations and to write a paper defining the physiological and constitutional characteristics of such populations. How far do we allow the publication of such research to go, for it is only at the level of publication that we can exert any control over the individual efforts of investigation. How many papers should be published on the physiological characteristics of a specific sport? Do we need separate papers on the professional, collegiate, scholastic and recreational levels for each sport? Do we need to publish data on each sport? As a second illustration, how many more papers should be published on the prediction of body composition in special groups? Theoretically, a sufficient number of groups could be identified to justify the publication of a separate journal for research in this area alone. As a final illustration, what limitations, if any, should we place on publishing additional studies that investigate the interaction of mode, frequency, duration and intensity in the prescription of exercise?

To date, we have encouraged the continuation of this type of research, if not openly, at least through acceptance of the final manuscript for publication. However, we should now begin to encourage investigators to abandon this "shotgun" approach and take what information is available and develop a model, and then through carefully designed and well-controlled experiments, test the model to determine if it accurately describes or predicts the events under study. Obviously, the development of a model is an extremely complicated procedure, for it attempts to predict the sequence of events or results of an intervention in some logical fashion under all conceivable circumstances. When the model is found to be in error, modifications are made on the basis of a detailed analysis of its failure. Models will allow the exercise physiologist to investigate a problem area in an orderly and progressive manner, an approach which is much more likely to result in extramural funding.

When forecasting the future of research in exercise physiology, a distinction must be made between basic or theoretical research, and applied research. Ten exercise physiologists, selected on the basis of seniority, leadership and research productivity, met in November 1978 at Pennsylvania State University to look at, among other things, the future of exercise physiology. With respect to basic research, the following areas were cited as critical to furthering the development of knowledge in this field: pharmacological aspects of exercise; exercise relative to disease and aging; membrane physiology; molecular aspects of muscle physiology; motor control and recruitment; neuromuscular basis of strength development; immunology; and exercise and connective tissue alterations. In the area of applied research, it was felt that studies would continue to focus on areas such as facilitating athletic performance, exercise prescription and fitness assessment.

There appears to be a national trend toward shifting emphasis in research from the basic to the applied. Granting agencies are becoming more concerned about the practical applications of research that might be generated from scientific proposals selected for funding. This trend can be seen in the exercise sciences. While basic research is the lifeblood of any academic discipline and must remain a high priority in any long-range planning, a number of practical questions might be asked and then answered through appropriate research designs. What is the role of exercise in preventive and rehabilitative medicine? What is the optimal exercise dosage one must have to benefit from being physically conditioned? What are appropriate test batteries for testing athletes in different sports to determine their athletic potential and conditioning needs? What are appropriate acute and chronic nutritional requirements for athletes in various sports? What is optimal body weight and how is it best attained and maintained? We are just beginning to direct our attention to these areas, and the initial results are encouraging.

To strike an even balance between basic and applied research is probably a sound approach for the future. Hopefully, each researcher would be able to achieve this balance, thus avoiding a dichotomy in the investigation ranks between the theoretical and the applications scientists. In addition, future research efforts will, of necessity, be of a collaborative and interdisciplinary nature. Research "teams" will be loosely formed to apply a concentrated team approach to the resolution of multidimensional problems.

Education

To prepare for the future, most institutions of higher education will have to alter substantially their physical education programs. Some progressive institutions have already initiated change. There must be considerable flexibility in our future programs, allowing students majoring in physical education to pursue any one of many alternatives to the traditional emphasis of teacher preparation. Perhaps the best approach to provide the appropriate depth of training for a discipline composed of many subdisciplines, would be to have a central core of course work required of all major students and a manageable number of areas from which students could select one in which to specialize. Students electing to pursue traditional teaching and coaching areas would receive their specialization in the pedagogical aspects of their discipline. Those pursuing careers as exercise technicians, exercise specialists or exercise program directors, as defined by the American College of Sports Medicine (1975), would receive additional training in preventive and rehabilitative medicine. Those oriented toward research and advanced degrees would have a totally different specialization, emphasizing sound preparation in the basic sciences and practical experiences in a research setting.

As students progress from undergraduate to graduate-level preparation, the experiences should become more specialized. This places a considerable burden on faculty since faculty resources are finite and levels of experience and competence greatly vary. Thus, it would seem wise at the graduate level for each institution to become more highly specialized in its options for in-depth specialization. Rather than attempt to specialize in all areas, major institutions should select one or two areas to concentrate all of their resources. This would apply to major areas within subdisciplines as well as to subdisciplines themselves. I am convinced that this measure would advance knowledge in our profession much more rapidly and produce a greater number of highly qualified graduates who would be more productive in their careers.

Since we live in an age of rapidly proliferating knowledge, it is our obligation to initiate comprehensive programs of continuing education. Several professions, such as medicine, require continuing education of their members to maintain high standards. A similar system will soon be essential for the exercise physiology field. The knowledge explosion has left many of our former graduates in a precarious position. They hold valid degrees but have not had the opportunity or have not taken the opportunity to keep abreast of latest advances. Although a strong case could be made for establishing a mandatory requirement, in practice it would be difficult, if not impossible, to implement. Thus we should concentrate our efforts on establishing sound continuing education programs with a unique system of incentives to make the programs attractive to those who would benefit from them.

Summary

The future looks bright, but the forecasts which have been made necessarily dictate a dedication to meaningful and carefully planned change. The potential for substantial growth in exercise physiology is excellent from the perspectives of employment, research and education. An aggressive and concerned leadership must allow this growth to occur in an organized and controlled manner to prevent the academic equivalent of urban sprawl.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: PSYCHOLOGICAL VIEW

George E. Stelmach

In speculating about the challenge of change for physical education in the 1980s from a psychological perspective, I will restrict my remarks to motor control and learning. I do so for several reasons: it is at the heart of experimental psychology because it focuses on the processing and transforming of movement information, it currently has momentum and prestige, and I know the most about it.

Current State of Affairs

The psychological basis of motor skill is perhaps the most dynamic and expanding area within the scientific core of physical education. One has only to look at the increasing number of researchers involved in it or read any movement-oriented scientific journals to see its increased popularity. Conferences in systems engineering, neurophysiology, experimental psychology, psycholinguistics, and communication disorders are expressing heightened interest in motor control problems. In recent years the motor behavior area has captured an inordinate amount of experimental and theoretical attention. It has been a period of excitement, dither and controversy. Although my remarks are intended for physical education, the escalation is not unique to physical education but broadly based. We in physical education must recognize this change, understand its implications and speculate about its future. Motor behavior has had a long, rich history, in fact the history of psychology is the history of motor skill research. So why the sudden change and increased interest?

First, the motor behavior area has gained respectability in the scientific community by taking on the problems left behind by previous generations in psychology and neurophysiology. Some years ago psychology extensively studied motor skill in the S-R tradition of associationism but it was abandoned abruptly in the late 1950s with the information processing movement. The pendulum has now swung to an interest in motor skills largely due to motor behavior investigators in physical education. Similarly, neurophysiologists have always been interested in motor control but have seldom operationalized their views on structure and function to the broader issues of motor coordination. Again motor behaviorists in physical education have played a major role in focusing theoretical attention on the extent to which sensory influx is responsible for building motor patterns. In both cases physical educators have been instrumental in demonstrating the importance of motor control in understanding the behaving system.

A second reason for renewed interest in motor behavior is the increased appreciation that motor skills have a rich cognitive component and that the execution of motor activity is the direct result of perceptual and memory activity. Computers have triggered much contemporary theorizing about motor skill, not only because they allow experiments to be conducted more easily and data analyzed more thoroughly but also, as is believed by many psychologists, the activities of computers are in many respects akin to cognitive processes associated with skill learning. The computer age has provided a much needed reassurance that cognitive processes associated with motor behavior are real. It has provided a new vocabulary and new set of concepts for dealing with mental functioning that precedes skilled acts. No longer do psychologists and physical educators believe that there is a duality between cognition and motor activity. Much contemporary research has found rich cognitive components in motor skills.

Third, we are entering into a period which demands that scientific problems address relevant ecologically valid phenomena. Psychology has just gone through an era that saw reductionism at its best. Investigators often generated tasks and techniques that created artificial situations, differing radically from the real world so that some aspect of behavior could be studied in isolation. Today investigators are beginning to study real-life problems, and what is more ecologically valid than to study motor skills.

Finally, motor skill research is no longer shackled by the direct application of research findings. Formerly motor skill research had a strong alliance with applied psychology and asked more questions about practical problems than about basic law and theory. Most of the early work provided useful information, but too often investigators were satisfied with answers to immediate questions and failed to press on and ask about variables and mechanisms that make up basic laws and theories. The applied approach is valuable for the short term because it solves the pressing matters of the moment, however its results are often problem-specific, failing to reach out for generalizations that encourage conceptual understanding.

Decline in Motor Learning Research

I have avoided reference to motor learning because contemporary motor behaviorists are currently studying motor control rather than skill acquisition processes. Such a change is radical, especially since motor skill research was initially shaped by the attitude that learning is the primary aspect of the skill situation that we in physical education should be concerned with. The previous conceptual structure for motor learning research was shaped by the overriding view that improvement in task performance as measured by speed, reduction of errors or response consistency was the sole criterion for success regardless of whether the task was acquisition of a laboratory skill or classroom skill. As a natural consequence, conditions of efficiency had first priority in research with major attention directed to spaced versus massed practice and whole versus part learning. Retention and transfer were conceived largely in terms of the central problem for education.

This research approach produced voluminous amounts of empirical research conveying scant knowledge about motor skill acquisition and retention processes. Over the years there was a gradual understanding that when differences are observed in performance within the learning paradigm, it is difficult to precisely determine why the observed changes in behavior occurred. Contemporary thought maintains that learning cannot be understood without understanding the characteristics of perception, memory and movement execution parameters.

In retrospect, it is easy to see why previous learning models have failed. Without knowning much about mechanisms underlying motor performance, how could we expect to accurately unravel the general principles of learning which are far more complex than simply explaining motor control.

Revolution in Motor Behavior

Kuhn (1920) observed that the evolution of science is an outgrowth of two markedly different phenomena—normal science and revolution. Motor behavior is currently experiencing such revolution. Motor learning research appears to be waning and a new conceptual framework is emerging which addresses the underlying structure of motor control. This is the result of motor behaviorists realizing that meaningful science is more than simply accumulating data on variables effecting learning. Although time and innovative research will determine the fate of this newfound revolution, the revolution has indeed begun and motor behaviorists appear willing to follow its logical course.

Change in Traditional Views of Motor Control

The challenge for physical education in the 1980s from the psychological perspective is to make a systematic attack on mechanisms underlying coordinated movement, accompanied by a critical re-assessment, and reformation if necessary, of classical positions on the nature of motor control. It has been traditional to think of motor coordination in terms of a hierarchial framework where some executive center sends a command to a muscle to make a specific act. A desired action is achieved by virtue of a single computation which in a single instance specifies all necessary details including how to handle perturbing influences. When the total number of variables is small, a conceptual framework like the foregoing is felicitous but when there are many variables, the traditional view appears naive and cumbersome. Bernstein (1967) developed a lengthy and cogent argument against this level of description, the gist of which is that the number of degrees of freedom to be individually specified poses an insurmountable task. One that is exaggerated all the more by the context-conditional variability in the relation between innervational states of muscles and resultant motions at the joints.

An alternative to the hierarchial orientation regards the control of coordinated motor activity as a heterarchy. Simply stated, in the heterarchy there is more than one center that specifies motor control parameters. These centers are autonomous subsystems relying on coordinative structures, generally referred to as a group of muscles often spanning several joints which act as a unit (Easton 1972). In this type of system each coordinative structure solves a limited aspect of the degrees of freedom problem without direct specifications from the brain. Coordination in the heterarchy is defined not in terms of biokinematic relationships but in terms of relationships among forces (Bernstein 1967) supplied by the muscles and those supplied reactively by the environment. This system uniquely preserves the stability of the behaving system in its intended environment. Consider the following examples which suggest that the control of individual muscles is not through executively specified commands as traditionally believed, but through the organization of the motor apparatus of the spinal cord.

One example is the indeterminacy of anatomical structures. The movement of joints and the permissible motions in the biokinetic chain comprise an extremely large number of degrees of freedom. Further, the muscles—which are the focal point of control through central commands—are ambiguous in their roles with regard to joint movements. For example, Turvey and Fowler (1978) point out that the upper pectoralis major which inserts proximally on the clavicle and distally in the upper shaft of the humerus will adduct the arm when the humerus is just below the horizontal axis. But from any position in which the axis of the humerus is slightly above the horizontal axis, contraction will adduct the arm in a vertical plane. Similarly, mechanical sources also display indeterminacy. A notable example is the fact that different innervation states of the muscles, including force, amplitude and velocity, can result in identical motion of a limb segment. The moral for us and the brain is that the role of the muscle cannot be taken for granted and innervation states and movements relate equivocally (Turvey 1977).

A more striking example is evident in locomotion. Although there are many ways a limb can be lifted and lowered, it is always the same sequence of joint changes that gives rise to the leg movements during locomotion regardless of how fast the feet are traveling or the type of gait employed. These invariant relationships over the muscles and joints of an individual limb during a step cycle support the claim that there are particular muscle linkages guided by coordinative structures (Shik & Orlovsky 1976).

The magnitude of the degrees of freedom problem can be further understood by considering an airplane control system with five hinged parts—two ailerons on the wings, two elevators on the tail and a rudder. These can be constructed as a freely-linked kinematic chain with five degrees of freedom. This simple conception is only a fragment of what the human body is capable, but nevertheless it is a simple control system. With this system let's compute the information load on a pilot in which each degree of freedom is individually controlled. Let's assume that while each hinged part can continuously vary, only eight positions are truly effective. That means there are eight to the fifth power (8^5) possible combinations. Doing the arithmetic we find there are 32,768 independent states possible (Turvey, Shaw & Mace 1978). Need I say more. Since the human body is much more complex compared to my simple example, there must be some economy in the system.

This overview of the need for a heterarchial model is brief and fragmentary, but it should be sufficient to make the point that the variables of the effector mechanism are not individually and directly controllable. That is, the programming of coordinated movement may not be in terms of individual muscles as classically believed. Rather it seems that the basic problem for understanding motor coordination is that of mastering the abundant degrees of freedom problem. If we are going to understand coordinated movement we must begin to ask different kinds of questions than we currently are asking, and begin to think of motor skills in terms of coordinated structures which allow heterarchical organization (Turvey 1977).

Another emerging data base that suggests a reorientation of scientific thought comes from the area of memory. A number of puzzles have recently emerged that defy explanation by traditional views and have forced a re-assessment of how the higher brain centers control coordinated movement. One example in the motor system is understanding how skills are transferred from one limb to another. For example, I am right-handed but if I try, I can write with my left hand or even by holding a pencil in my teeth. The puzzle is how does that particular group of brain cells process information about writing. Something has to happen in the central nervous system that permits these constancies in the foregoing example such that information is distributed to places in the brain where it has never been before. This type of observation raises the question of how does a hard-wired brain in which connections between parts that are fixed, allow such perceptual flexibility.

What do these observations about perceptual constancy and transfer of coordinated skill suggest? For some scientists (Pribram 1976) it means the brain is directly involved in perception and generates a pattern of frequencies. Pribram suggests that instead of postulating an engram that might make up a specific memory, wave forms are organized perhaps like a holograph. Memory is then activated by the right set of wave forms. Imagine how cumbersome it would be if in learning a tennis serve you had to extract every feature of what you were copying and describe it to yourself, feature by feature. Instead it seems likely that the whole configuration is transmitted and analyzed by its component wave forms which activate a holographic motor pattern. The most elegant aspect of holography is that memory storage is fantastically great and is based on a few rules rather than vast details.

The conceptualizations of the degrees of freedom problem and memory flexibility clearly point out that the motor behavior area is rapidly changing. Further, these paradoxes are revolutionary and suggest an overthrow of our current conceptual framework for the coordination of motor acts. While there is little doubt that chaos will prevail in the next several years, the major task at hand is to assimilate the rapid accumulation of new technical information while making sense of the almost bewildering variety of concepts. It is useless to theorize if one lacks empirical data to shape and constrain one's thinking, and empirical data are meaningless unless concepts and hypotheses shape and constrain experimentation. We must develop theories of sufficient logical depth to do justice to the evolutionary histories of human organisms without losing the ability to test whether our theories are workable.

Maintaining Current Momentum

Is physical education prepared to support motor behavior's current momentum? With psychology, neurophysiology and engineering converging on motor behavior, the future for physical education is unclear. On one hand we have a subdiscipline contributing to our emerging status as an academic discipline, and on the other we have competing disciplines focusing on the same area. It is a period of dramatic transition with vague concepts on the horizon. Scientific inquiry and its accomplishments always migrate toward the most gifted and resourceful scientists. If physical education is to keep the psychological perspective alive and strong within our profession, it is essential that young scholars beginning their careers are fully supported as they are in most academic disciplines. This not only means financial and resource support, but also providing both the opportunity to pursue scientific interests no matter where it takes them and a forum to express what may seem like radical ideas. Too often in physical education we have a definite view on the kinds of questions that are important and stifle scientific creativity before it begins.

Such support during the period of transition will not be easy because many of these young people will traverse the traditional boundaries of the so-called relevant sciences to physical education. In the future the traditional link with psychology will be less direct and motor behavior will become more interdisciplinary. As a result, motor behaviorists will study in more detail aspects of the systems control theory, artificial intelligence, psycholinguistics, basic neurophysiology and brain theory. Moreover, many of them will challenge a number of your beliefs on the importance of feedback, learning and transfer. Much of their future depends on whether physical education allows motor behavior to be attacked innovatively.

Development of a Multidisciplinary Approach

From my foregoing comments, it should be clear that what motor behavior scientists need to know and pursue is staggering. The human organism has developed a fantastically multi-layered, ever-changing system that almost defies analysis. Unless diverse approaches are sought, our insights will not go beyond the provincial. Motor behavior research requires increasingly specialized techniques and it will often proceed on a day-to-day basis with attention confined to the immediate demands of technical methodology and immediate theories. However, we need a broad flexible multi-disciplinary framework focusing on the conceptual understanding of motor behavior. Without it the future might produce fragmented, isolated and competitive subdisciplines where research ideas or situations become ends in themselves. If the future is to be bright for the psychological perspective in physical education, we must cumulate and synthesize research findings in a broad perspective that stresses the biological and psychological determinants of coordinated acts.

Experimentation Outside the Laboratory

Motor behaviorists need to study skill in normal circumstance and move beyond the confines of laboratories. I don't think this means an end to laboratory experiments but a commitment to studying details of the real world in which performers perceive and act. We need to study motor issues, not just mental operations that precede skill. Somehow we must come to terms with the sophisticated and complex perceptual-motor skills that people are actually capable of acquiring. We need also to understand how strategies and central processes are developed and maintained and how structured constraints impose limitations on motor coordination.

Improving the Relationship between Theory and Application

Basic scientists work out a detailed theory of how a process-like skill acquisition takes place, specifying the role of different variables governing the process. After the theory is developed, practitioners can apply it without needing much creativity of their own to adapt it to classroom situations. In my view it is hopeless to expect scientists to produce theories of skill acquisition which would render routine the efforts of curriculum designers to produce programs which work efficiently and allow optimal student learning. Physical education must face up to this reality and make the necessary changes in the preparation of practitioners. But this does not mean that basic science is irrelevant to the job of application. Rather, basic science can be thought of as a microscope since it allows curriculum designers to see what is not easily observable. Obviously, basic researchers need to provide programmers with cues, such as theories on control and information flow, to assist them in making a sound curriculum design.

Theory should provide teachers with a language in which to discuss motor skill problems. It allows teachers to incorporate findings in a coherent manner from a number of different studies. Theory also functions as an organizational structure for the current state of the art and forces consistency in interpretation and conclusions. It does little good to say that someone cannot learn because of some deficiency. Once problems have been diagnosed, theory helps teachers develop prescriptive judgements toward solutions and thus provides a sound rationale for modifying the method of instruction and structure of the educational environment to maximize learning performance.

Theory's most important role eventually might be to provide students with more control over their own performance. Individuals have great difficulty gaining insight into their own mental structures and information processing activities. Perhaps one of the most important roles for motor behavior in the teaching of skills is for students to learn something about what's going on inside their brain as they learn a skill.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: A BIOMECHANICAL VIEW

James G. Hay

Biomechanics has existed as an area of scientific study for more than 100 years—albeit without that name until recently. Although one can claim that the biomechanics of sport has existed for a similar time because some of the earliest work dealt, at least in passing, with sport movements, such a claim is misleading. It was not until the pioneering works of Fenn (1930a,b) and Hill (1926; 1927a,b) on the mechanics of running in the late 1920s–early 1930s and those of Cureton (1930a,b,c; 1933; 1940) and Karpovich (1930; 1933; 1934; 1935; 1939) on the mechanics of swimming over the next decade that the first major contributions to the field were made.

Even after this relatively late start, the field was slow in developing and not until the 1950s were further major contributions made. Among these were the fine studies of Alley (1952) on propulsion and resistance in swimming, Henry (1951; 1952a,b) on the mechanics of sprint starting and Selin (1959) on the aerodynamics of the pitched baseball. The studies of Ganslen (1940; 1941; 1947; 1958) and Ganslen and Hall (1960) on the mechanics of the pole vault and on the aerodynamics of javelin and discus flight also deserve mention.

The present state of the field owes much to events to the mid-1960s. At that time several physical education departments with strong graduate programs replaced the cafeteria-like structure of the Ph.D. degree— a structure in which students moved down the education line taking a little bit of a lot of things—with one in which students were required to specialize in one or two component areas of physical education.

Exercise physiology was the first area to receive emphasis. New exercise physiology positions were created, advertised and filled; new labs were developed; new courses were introduced; Ph.D. students were recruited and trained; research activity flourished; associations were formed; meetings were conducted; and journals were produced to disseminate the newly-acquired knowledge. In due course, this period of rapid growth halted as the supply of exercise physiology Ph.D.s rose to meet and eventually surpass the demand.

By that time, however, emphasis in the development of graduate programs had shifted from exercise physiology to motor learning. The sequence of events that characterized the development of motor learning resembled that of exercise physiology and, like its predecessor, led eventually to the supply of graduates exceeding the demand.

During the early to mid-1970s, emphasis shifted to biomechanics, and the by now well-established sequence of events was again set in motion.

Because this shift to biomechanics is a relatively recent event, it is pertinent to ask, "Where is the biomechanics of sport at present in the developmental sequence established by its predecessors?" The remainder of this presentation will be devoted to answering this question and in the process, identify some challenges with which we will likely be confronted in the 1980s, making specific references to graduate education, research, teaching and the national economy.

Graduate Education

In the last 8 to 10 years, many positions for biomechanists have been created and filled and many graduate programs have been developed. There are, for example, at least a dozen institutions in the United States offering a doctoral degree in biomechanics. Students have been recruited for these programs and many of them have completed their doctoral degrees and taken positions in the field. Others—about 35 at a conservative estimate—are currently enrolled and working towards the degree.

These developments and a concomitant increase in qualified graduates have led to a slow but steady decline in the number of openings in biomechanics. Indeed, very shortly the supply of graduates will far exceed the demand. To adjust to the diminishing demand for graduates, we can decrease the supply, increase the demand or do both.

The supply of graduates can be decreased by setting more rigorous standards for admission to, and graduation from, our Ph.D. programs. On one hand, this should lead to an improvement in the quality of graduates and thus in standards in the field. On the other hand, it might create serious difficulties in terms of accountability.

The demand for graduates might be increased—as it has been recently in exercise physiology and, to a much lesser extent, in motor learning—by demonstrating to industrial and other non-academic institutions that a Ph.D. in biomechanics can contribute to these settings. Some progress has already been made in this direction and appointments to non-academic positions are being made but on a limited scale. The national economy permitting, the creation of employment opportunities in non-academic settings is likely to increase, at a relatively slow rate, for some time to come. Increased demand for our graduates, however, is a short-term solution to the problem of oversupply. Indeed, it might be argued that it is not really a solution at all but simply a means for delaying the onset of the problem.

Another, perhaps less obvious way to respond to the oversupply of graduates, is simply to act as if the problem did not exist. That is, blithely ignore the state of the marketplace and let graduates work out their own salvation. This approach ensures a high degree of competition for each position and shifts the onus for quality control from educators to employers. While problems might still arise in the long run, the implicit or active misrepresentation of the job market likely to be involved in this approach should ensure a continuing supply of graduate students and delay and minimize accountability problems. Although we might all wish it otherwise, this approach will no doubt be followed by those untroubled by ethical or moral questions or by those who simply fail to recognize the state of the market and the existence of these questions.

Research

Changes in positions, programs and Ph.Ds over the last 8 to 10 years have naturally been accompanied by changes in research activity. The quantity of research has increased substantially and the quality has had some improvement. Professional societies provide for oral dissemination of research findings, and new societies—most notably the American and International Societies of Biomechanics—have formed for the same purpose. The number of journals accepting papers on the biomechanics of sport has also increased.

The direction of research in recent years has been influenced by increased emphasis on participatory physical activity in our society and the steady decline in U.S. performance in international athletics.

Increased public awareness of the benefits of physical fitness has led over the last few years to masses of people participating regularly in activities such as cycling, tennis and jogging. This upsurge has created a boom in the sale of sporting equipment which, in turn, has resulted in extensive reevaluation of the design and construction of sporting equipment and apparel. Sport biomechanists have been very much involved in this process and are seeking the optimum design of items such as running and basketball shoes, tennis rackets and weight-training equipment.

U.S. standing in international athletics and most noticeably in Olympic Games has been declining for at least a decade, partly because of lack of interest in international athletics compared to interest in regional and national competition and partly because of the incompatibility of the U.S. athletic governance system with the achievement of success at international levels. Some believe the decline has been due partly to an uncoordinated scientific approach to the selection, preparation and performance of U.S. athletes compared to that used in many other countries. This belief, firmly held by most biomechanists and others in exercise sciences, has led to the analysis of performances of national and international competitors.

The involvement of biomechanists in equipment design and evaluation and the performance of top-class athletes has had both good and bad effects. Among the beneficial effects has been the influx of funds for equipment and for student and faculty support, and the opportunity to develop and demonstrate methods of practical significance. This involvement may also have served to make biomechanists more aware of the gulf between scientific data and the needs of practitioners for whom it is ultimately intended.

The detrimental effects are a source of some concern. In attempting to solve problems of interest to manufacturers of sporting equipment, biomechanists in some instances have conducted studies in which equipment or apparel has been examined in detail and the human being for whose use it is intended has been virtually or completely ignored. These are studies in mechanics rather than biomechanics and, as such, offer little likelihood of advancing an understanding of human motion. Thus it might be argued that by diverting the efforts of those capable of making important contributions in biomechanics, our particular field suffers.

A somewhat similar problem can arise when biomechanists work with top-class athletes. They and their coaches are interested in relatively simple measures of performance, as, for example, the velocities of the athlete or equipment at critical instants such as touchdown, takeoff or release or the length and duration of contributing phases such as the times of takeoff and flight. Generation of such data, usually via film analysis, is often helpful to coaches and athletes but is rarely more than a trivial contribution to knowledge in the field. Thus, if the work merely provides data of this kind, the biomechanist, wittingly or unwittingly, functions as an overqualified technician, not as a researcher.

A challenge of the 1980s will be to strike that balance which maximizes the beneficial effects of our involvement with equipment manufacturers and top-class athletes and minimizes the detrimental ones. In this regard, biomechanists might adopt a policy of not accepting research unless solution of the problems of interest to the sponsor contributes to knowledge in the field.

Another characteristic of current biomechanics research is an almost exclusive concern with applied questions. Thus, while dozens of biomechanists are conducting research on specific questions of techniques in running, swimming, ski-jumping, etc., very few are working on more basic, general problems. This is a grossly inefficient way of advancing knowledge. If we were to formulate and answer questions about matters such as the optimum coordination of body segments for the production of maximum force and velocity, the optimum relationship between range and rate in cyclic activities, etc., we could then apply this knowledge to any activity in which such considerations were relevant. This approach is, in my judgment, infinitely more effective than resolving the same questions within the constraints of myriads of specific sports.

Teaching

Recent developments have created conflicting pressures among teachers of undergraduate kinesiology and biomechanics courses.

On one hand, development of biomechanics as an area of specialization has resulted in a demand for graduate students with a strong background in mathematics and physical sciences and a demand for changes in the undergraduate course so that students will be better prepared for advanced study. In response to these demands, many teachers have developed undergraduate courses which have a heavy theoretical basis and include extensive treatment of research methods used in biomechanics.

On the other hand, there is a growing awareness that biomechanics can make important contributions to professional preparation of teachers and coaches. This, in turn, has led to demands that undergraduate course content be changed to better reflect the needs of those students—the vast majority in most cases—preparing for teaching and coaching careers. In response, many teachers have developed courses consisting of a bare minimum of theory and as much application of that theory to the problems encountered in practice, as time will permit.

The Kinesiology Academy of AAHPERD has been trying to resolve these conflicting pressures. Following the National Conference on the Teaching of Kinesiology at the University of Illinois in the summer of 1977, the Academy set up a task force to prepare a statement on the function, and a set of guidelines on the conduct and content, of the undergraduate course. This task force reached the conclusion—subsequently endorsed by participants at the Academy's annual meeting—that the undergraduate course's prime function is to provide students with the knowledge and experience necessary to conduct useful qualitative analyses.

The Task Force has recommended that the undergraduate course be divided into three equal parts—one devoted to anatomical considerations, one to basic mechanical concepts and one to the qualitative analysis of human movements. The first two present no major difficulties. Except for possible differences in topics covered within each part and, in some cases, the equal weighting of the two, they represent no major departure from traditional pattern. The third part, however, presents substantial difficulties. While the importance of qualitative analysis in teaching and coaching is widely recognized, few attempts have been made to develop a simple yet rigorous system for conducting such analyses. While existing systems serve a useful purpose until something better is available, they fall far short of what is ultimately required. Thus one challenge in the 1980s is to develop a thorough, effective system which can be used to perform simple, accurate biomechanical analyses and to determine what instructions should be given to performers.

Members of the Kinesiology Academy's Task Force and many others within the Academy firmly believe that adoption of the proposed guidelines for the teaching of the subject at the undergraduate level will substantially elevate the overall quality of work done at that level. It should ensure, for example, that students receive a reasonably thorough introduction to anatomical and mechanical aspects of human movement. Many current courses emphasize one of these to the almost total exclusion of the other. By developing their skills in qualitative analysis, students should be better prepared for their roles as teachers and coaches than they now are. Although certainly not its principal purpose, standardization of content should help minimize problems currently encountered when students who have taken vastly different undergraduate courses enroll in graduate-level courses in the area.

Securing widespread adoption of the Kinesiology Academy guidelines is thus a challenge in the 1980s for workers in kinesiology and biomechanics.

National Economy

Overriding all challenges to be faced in the 1980s by biomechanics, by physical education, and indeed by society, is the state of the economy. The 1980s seem likely to be a period of great economic uncertainty.

If rampant inflation can be arrested and external pressures to which our economy is subjected can be substantially reduced—two mammoth tasks—the resulting economic conditions are likely to favor continued growth and development. In this case, it is reasonable to expect that biomechanics will continue to develop along lines similar to those already followed by exercise physiology and motor learning. That is, the period of rapid growth now approaching an end will be followed by one in which the field gradually attains maturity. The level of maturity attained will largely depend on where the major research efforts are focused—on important central questions or on trivial, peripheral ones—and on the extent to which emphasis shifts from quantity to quality in all areas within the field.

If inflation and external pressures on our economy are not substantially reduced, the economic turbulence evident today is likely to be exacerbated for our entire society. In biomechanics this would lead to heavy cutbacks in all areas of activity. While most of these changes would have a detrimental effect, it is conceivable that one such change could have a beneficial influence. As an example, in Eastern Europe the shortage of funds for equipment and supplies has forced researchers to devote more time to identifying important questions in the field and to designing simple, crucial experiments to find answers to these questions. This is not presently occurring in the United States. By thus shifting emphasis from the power and sophistication of research tools at our disposal to the ends for which they should be used, an economic setback could actually benefit the field. This possible benefit notwithstanding, a pronounced deterioration in the economy would obviously pose serious problems for biomechanics in the 1980s.

Summary

There will, of course, be many challenges to be faced in the 1980s. Some of those that will arise in biomechanics—matching the supply of graduates to the demand for their services, developing a sound philosophy relative to sponsored research and improving undergraduate teaching—can be predicted with relative ease. These challenges can be met successfully provided those within the field recognize their existence and take the steps necessary to solve them.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: SOCIOLOGICAL VIEW

Madge Phillips

What is Next on the "Human Agenda?"

> The apes, after two and a half million generations, lived their lives much the same as did their earliest ancestors. They remained stooped, languageless, cultureless, static. But they were loving and generally peaceful.
>
> Then a remarkable thing happened. Out of their lines, man was born. And though basically loving, he has become the only known creature massively destructive of his own kind. By contrast with the apes, men have accumulated all that our distinctive minds have learned in three percent as many generations. For man was born only eighty thousand generations ago.
>
> Almost everything known as civilization has been devised by the most recent one-half percent of man's generations.
>
> For example, agriculture and the possibility of living in settled communities were invented only five hundred generations ago.
>
> Recorded history is only two hundred generations old.
>
> The Golden Age of Greece lived but one hundred generations ago.
>
> The entire span of the scientific era is encompassed by the last twenty generations.
>
> The era of nuclear power is only a little more than one generation old.
>
> The awareness of the possibility of universal abundance is less than one generation old.
>
> That we have come so far in the human agenda in so few reproductive cycles, particularly in the last twenty, and especially in the last three, makes the only emotional posture appropriate to a human being one of considered confidence. (Gorney 1972, p. 654)

According to Gorney, we are now in the midst of man's most momentous evolutionary leap, the transition from the era of scarcity to the era of abundance. He urges, therefore, that the next item on the human agenda is learning how to live without panic in a world of peace and plenty. In my opinion, we have been so conditioned to competition and scarcity that we have not acknowledged that we could change our focus and concentrate on new ways of looking at what is possible. Gorney stresses that cooperation is the law of life and is the most deeply rooted theme running through human success.

Bronowski asserts that the human gift is the gift of imagination. He reminds us that in 1580 Philip Sidney defended poets and other unconventional thinkers from Puritan charges that they were liars. "A maker must imagine things that are not." William Blake later added, "What is now proved was once only imagined." All human beings share this gift of imagination, especially scientists and poets. The poet dreams of new reality and the scientist realizes old dreams. Those who wish to look ahead to the future with imagination are often scorned as impractical utopians but perhaps it is worth asking, "Is the rainbow of one good utopian worth more than the mudpuddles of a thousand cynics?" Gorney suggests that the challenge of education is increasingly "... to teach adults, as well as children, judiciously to call upon the fullest range of imaginative fantasy in order that the fantastic new reality can be apprehended and mastered." Speculation about the future is no longer reserved for science fiction writers.

Utopianism

Utopian writers characteristically have emphasized new visions of social order. Rationality is overemphasized in almost all utopias—Plato's *Republic;* Bacon's *New Atlantis;* Campanella's *City of the Sun;* the American Brook Farm Experiment; Edward Bellamy's *Looking Backward;* and H. G. Wells' *A Modern Utopia.* A possible exception might be Skinner's *Walden Two* which stresses the desirability of involuntary manipulation of people by the laws of operant conditioning rather than a Socratic call for the examined life. Utopian populations respond to issues of social justice chiefly, and sometimes exclusively, through reason. Intelligence is worshipped and planning is a virtue.

Futurism, however, seems to have replaced utopianism. Contemporary sociologists, according to Winthrop (1968), are not willing to construct utopias because of their strong commitment to a value-free discipline. Winthrop argues that there is a need for a social philosophy of the future which includes more than predictions of *technological* possibilities.

Futurism

Two recognized futurist writers, John and Magda McHale, focus the major thrust of their work toward improving social conditions of the world's poorest people. Their thesis is that meeting the poor's human needs is one of the most pressing items on the world's agenda. Basic needs are the biophysical requirements for maintaining survival—"... the amount of food, clean water, adequate shelter, and access to health services and educational opportunities to which every person is entitled by virtue of being born (McHale & McHale 1979, p. 14). They stress the interdependency of these needs:

> Piecemeal attempts to focus exclusively on one need area at a time are unlikely to break the deprivation circle, even though they fit more easily into bureaucratic divisions. A long and healthy life is not determined by health services alone but by the inter-active combination of access to medical facilities, food, clothing, housing and fuel, and by such other factors as meaningful work, education, recreation and security, by the satisfaction of values and by the desire for living itself.

These primary needs tend to be similar regardless of social and cultural differences. Secondary needs are qualitative and more culturally and socially diverse. These needs include greater social justice, respect, self-realization, personal growth, affection and security. In societies where basic needs have been met, there is an increasing desire for a higher quality of life. Aspirations towards quality go with affluence.

Current trends in affluent societies include:

- *Concern about the quality of the physical and social environment*—This includes the quality of city life, consumer goods, the neighborhood and personal relations.
- *Decline in materialism as a central concern.* For example, the key debates that have traumatized affluent Americans in the past decade have not been over material issues but rather such issues as the ethical uses of power in the presidency, the morality of war, and the right to live and work free from discrimination, invasion of privacy and coercion.
- *Shift in value from things to people.* As material goods become more freely available, their value and importance have declined. Human development becomes prized above material investment. This shift of interest from goods to people is expressed in a variety of ways—from the human potential and awareness movements to renewed concern about family, child development, and experience of aging and death.
- *Decline in role, gender and race stereotyping.* People are becoming less limited by their sex, minority status and occupational roles in their search for personal fulfillment.
- *Change in the nature and centrality of work.* Since a large traditional work force in the production sectors is no longer required, affluent societies are having to rethink the employment and unemployment problem. Work is no longer the central focus for determining a variety of social relations, roles and identities and thereby much of the quality of the individual's life. (McHale & McHale 1979, p. 19).

Daniel Bell's classic book, *The Coming of Post-Industrial Society, A Venture in Social Forecasting* (1973), should be required reading for all educators. In regard to the significance of education in the post-industrial society, Bell's monumental work highlights the importance of knowledge; the high status of the professional class, based on knowledge rather than property; change from goods to services—the new services will be primarily human services (principally in health, education and social services); and a meritocracy that emphasizes education and skill in a "credentials society." Bell goes so far to say that "the university, which once reflected the status system of the society, has now become the arbiter of class position. As the gatekeeper, it has gained a quasi-monopoly in determining the future stratification of society" (p. 410).

Education

Social critics, utopian writers and futurists all agree that education enables a society to be maintained, advanced and perpetuated. Kimball and McClellan (1972), an anthropologist and a philosopher who write about the relations between school and society, state explicitly that educators must be aware of the impact which social forces have on individuals.

If the educative process is successful, many believe that it transforms individuals through successive stages from infancy to adulthood. On their way to adulthood, children must be shaped by the experiences which their environment provides. As the conditions of existence remain constant or change, so also can we expect that people too will reflect the life and times of the world around them. In our response to the ongoing events of the large or small social systems in which we orbit, each of us is molded by the events in which we participate. But we also make up part of the environment which shapes others. And thus, collectively, we form the great dynamic repository of mankind's past: the wisdom and skills which are manifest in the present and, with their accumulations, are carried into the future.

Because of our almost fanatic belief in the value of the individual we often overlook the necessity of seeing the system which encompasses us all. We are much less well informed on the workings and characteristics of this system than we are with the processes of learning. We need to examine learning as a projection from the social and cultural world, rather than study it as something that is merely a result of responses by the individual to external stimuli. This would suggest that the study of the educative process thus may be seen as the examination of the relation between the systems operating within a civilization and their effect upon the individual.

Students of the history of American education would in general, I believe, agree with Hechinger (1975) that American education has been a revolt against rank and birth. The writings of Washington, Franklin and Jefferson included statements proposing an educational philosophy which caused the Old World to observe a new country with fascination. Education was viewed as a mechanism that would give new power to the people and liberate youth by providing them with knowledge. "Power exercised by the people, education as a force for unleashing young, independent minds, a new relationship of mutual respect between the generations—these were the ideas that formed a liberation movement, of youth, of the individual, of the mind, that was to inspire revolutional forces across the world" (Hechinger 1975, p. 43).

Daniel Webster emphasized that every man should be subject to taxation in proportion to his property, not to the number of children he needed to educate. This revolutionary principle has been and is still debated, but the American idea of free and equal access to education as the great equalizer was to become an idea which other industrial societies would emulate. The American example of free education gradually began to unfreeze social and economic molds of stratification.

During the Civil War Congress passed the Morrill Act challenging the purist view of the university and higher education. The land-grant colleges were to serve a new clientele and offer an education which would help transform America by contributing to foundations of farming and technology. Elitists at home and abroad continue to be pessimistic and cynical regarding the broad demand for public education. Hechinger has said what many believe but have not had the courage to say. "What has made American education so powerful a force in a world that faces disaster unless it can improve the lot of the ignorant masses is its optimistic faith that more can be better and nothing could be worse than not to try" (p. 45).

Families

Sociologists do not agree in their evaluation of the rise of divorce. Some see divorce as a solution rather than a problem. To them divorce enables an individual to be free to move from an old, tired relationship to one that will hopefully be newer and more meaningful. Others stress the trauma on children. The family has traditionally had the task of socializing children. In 1978 the National Education Association reported that the American family has joined the list of institutions that are no longer able to fulfill their traditional roles in the lives of young people. As a result the school—not by consent, not by decision, but by default—has been, for an increasing number of children, the only institution that provides for orderly socialization and maturation.

Cornish (1979) discussed an NEA report which pointed to the following facts as evidence of family failure and its impact on children:

> Since 1975 the majority of American children have lived in a home where both parents, or the only parent, worked during the day.
>
> One out of six children now lives in single-parent household and 45% will do so before they turn 18.
>
> One million marriages ended in divorce in 1976 and in many cases neither parents wanted custody of the children.
>
> Two million children statistically qualify as battered. Twenty million live with an alcoholic parent. One million run away each year.
>
> One out of nine youths will be arrested before age 18.
>
> The suicide rate among 15- to 19-year-olds has tripled in less than 20 years. (p. 51)

The church, neighborhood and extended family no longer play significant roles in raising children. With increasing pressure on the nuclear family, the burden has shifted—yes, to the schools.

Population Shift

For the first time in 50 years, more Americans are moving to small towns than to cities. What is most important about this trend is not so much the types of people and towns involved as the fact that the shift represents an abrupt and dramatic break with the American tradition of urban expansion.

During the small-town exodus and concurrent urban explosion, individuals examined their options and chose to buck cosmopolitan problems rather than wrestle with rural ones. The same could be said with the current trend—in 1970 there were half as many doctors per 100,000 people in non-urban areas as there were in metropolitan areas. Chronic disease and infant mortality have far higher incidence in small towns, and old people who live in them have more health problems and find it difficult to reach a doctor. Income is another problem. Non-urban residents earn only three-fourths as much as city dwellers. Jobs are scarce. Twice as many of the nation's poor live in non-urban areas as in cities. People who live in rural areas are less educated, and their attitudes are often fundamental and conservative.

Why then are so many city dwellers moving to small towns? Industries and businesses are moving to small towns, so more jobs are available; better communications and transportation make for easier access to the city's benefits; crime rates in cities have soared to such heights that many people are afraid to stay; incidences of aggressive assault are twice as high in cities as in small towns, and the robbery rate is 13 times as high. Pollution is another factor.

One sociologist, Wilbur Zelinsky, hypothesizes that the more progressive a society becomes, the less people will flock toward traditional symbols of progress. As a society advances, economic features are not as important as human values, pleasures and physical surroundings.

Another theory reported by Schiefelbein (1977) was developed in elaborate detail in *The Annals of the American Academy* (Jan. 1977). Sociologists suggest that Americans have never wanted to live in the city at all; that the economic factor did not influence their choice—it forced their choice. Now that many Americans have achieved financial well-being, they are concentrating on other needs and fulfilling them by moving to small towns. This theory is supported by Angus Campbell whose studies show that although dwellers are satisfied with the specifics of life—hospitals, garbage collection, and so forth—they usually are not happy about life in toto. Rural residents, on the other hand, are satisfied more with the whole of their life than with any of its parts. One study included a statistic stating that 6 out of 10 city dwellers want to move from the metropolitan area, but 9 out of 10 small town residents wouldn't trade their life for any other.

Because the urban exodus began so suddenly, the sociological analysis of small-town living is currently more an art than a science. Social scientists will be writing on these topics. In the meantime the Americans who have left the urban rat race and settled down in the countryside can finally concentrate not on earning a living, but on savoring life itself.

Physical Education

Suits, a philosopher, has written a book, *The Grasshopper* (1978), in which, according to the book jacket, "by means of Socratic dialogue the author advances a definition of games and theory of utopia. His argument is that games are the characteristic activities of utopian existence, so that a theory of utopia requires a theory of games as its foundation." To quote Suits:

> while game playing may not be the sole occupation of Utopia, it is the essence, the "without which not" of Utopia. What I envisage is a culture quite different from our own in terms of its basis. Whereas our own culture is based on various kinds of scarcity—economic, moral, scientific,

> erotic—the culture of Utopia will be based on plentitude. The notable institutions of Utopia, accordingly, will not be economic, moral, scientific, and erotic instruments—as they are today—but institutions which foster sport and other games. But sports and games unthought of today; sports and games that will require for their exploitation—that is, for their mastery and enjoyment—as much energy as is expended today in serving the institutions of scarcity. It behoves us, therefore, to begin the immense work of devising these wonderful games now, for if we solve all of our problems of scarcity very soon, we may very well find ourselves with nothing to do when Utopia arrives. (1978, p. 176)

You will note that this quote is the only reference in this paper to the physical education activities of sport and games. As I have read and reread in the area of social issues and social conditions, I kept asking myself how could I be so naive as to assume that sport, game or movement could be considered as seriously as the issues discussed by social critics, sociologists and futurist scholars. Perhaps we should acknowledge the universality of play, sport and movement and be satisfied in knowing that when the ideal society is contemplated, movement, physical education and games will have a central role. Before that ideal is attained, perhaps those who participate in sport or game activities will do so because of the sheer delight and fun associated with these experiences.

The great challenge of our generation will be to solve human, not technical, problems. This implies that to be successful we must be able to live not only with ambiguity but also with each other. Choices will have to be made by people who have learned to hold simultaneously two conflicting ideas and to see truth in both of them. Without knowledge of the humanities we cannot appreciate the complexity of human existence in the moral dimension of choice.

The discipline of physical education cannot possibly solve major social problems, but if we continue to have physical educators who understand the nature of society and are cognizant of what is happening in the social realm, we might make a contribution toward solving these problems.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: A VIEW FROM ADMINISTRATION

Phebe M. Scott

The Peter Principle (Peter & Hull 1969), used for so many years in our field, is not an efficient or sound way of selecting individuals for administrative posts. The idea underlying this practice was originally one of reward. We rewarded good teachers, good researchers, good coaches by removing them from the jobs they did well and promoted them to administration positions. While the motive might have been admirable, the results were not always satisfactory. As Eble points out in *The Art of Administration,*"... the ranks of chairpersons and deans are filled with successful scholars who proved to be quite unsuccessful in handling administrative assignments" (1978, p. 96).

Administration and their processes have changed on all levels. Some of these role changes are obvious to us. College and university presidents used to be acknowledged intellectual leaders of their institutions. Today they are hired primarily for their ability as public relations experts and fundraisers. Vice presidents, provosts and deans used to have distinguished scholarly credentials. Now they are organization people acclaimed for their management abilities and business skills. Changes have occurred at the departmental chairperson level as well. These will be dealt with in greater detail later in this paper.

Factors Contributing to Changing Administrative Concepts

Colleges and universities have undergone considerable transformation since the end of World War II. The rapid growth in numbers of students attending universities and the resultant physical growth of campuses have changed the concept from that of a small, intimate community of scholars to a large, impersonal organization of separate and often competing departments. To cope, it has been necessary to add new layers of administrative responsibility. This proliferation and the resultant narrower and specialized scope of responsibility has left many institutions with an organizational chart that almost defies description.

Student and faculty activism of the 1960s which challenged established university administration patterns has resulted in students and particularly faculty insisting on their rights of involvement in decision making, especially decisions affecting their professional growth and wellbeing. Governance of a university is no longer the exclusive domain of a few key administrators. It is a concern of faculty, students and civil service personnel. University constitutions have been written and rewritten to assume the widest possible constituency. Elected faculty senates debate university policy on everything from parking fees and program approval to the removal of the president. Faculty committees handle such matters as academic freedom, personal welfare, curriculum, future planning and directions, equity adjustments, tenure and salaries. Students, too, have their own avenues of redress if their rights are violated. No longer are they passive consumers of education but have, or could have, a strong voice in policy determination.

Civil rights legislation has had its impact on higher education. Affirmative action has changed hiring patterns. Search committees must show that minority and/or women candidates have been included among the pool of applicants.

During the past 20 years we have seen the advent of collective bargaining on many campuses. When the unions come in, decision making is even further removed from traditional administrative authorities. Personnel matters, program offerings and working conditions all can become matters for negotiation.

Fiscal management is probably one area in which the faculty as a group has made least inroads. This is not to say they have not tried. Particularly as financial support decreases, faculty anxiety understandably rises as to how available funds will be spent. Faculty do sit on university budget committees but because university budgets are complicated affairs, it is difficult for faculty to have any direct control over total fiscal matters. In state supported institutions, appropriations are ultimately in the hands of the state legislature and fiscal accounting procedures regarding budgets are dictated by external agencies.

A factor that has played a major part in the changing concept of administration, particularly at the departmental level, is the traditional perception of administration. For years we viewed administration synonymously with leadership. The dictionary defines *leadership* as "moving or guiding a group" and *administration* as "managing or maintaining a group." According to Alexander, "leaders serve in the role of a change agent while administrators serve the role of maintaining the organization" (1975, p. 1). Our misinterpretation of administration is creating difficulties for administrators and faculty alike.

The Administrative Leader

The administrative leader as department chairperson occupied a unique place in physical education until approximately the 1960s. Professional leaders in our field often held administration positions while providing high quality intellectual and educational guidance for their faculties and the profession-at-large. We remember these persons primarily for their educational leadership, not the fact that they also held administrative posts. To many it was one and the same thing. The reputation of a physical education department was frequently as much the result of its administrative leader as it was of the total faculty. Emphasis on the leadership aspect of an administrator's role was possible because of how the maintenance or managerial aspects of administration were handled. It is the latter aspect of administration which has undergone change in the last few decades, causing the new view of administration.

Taking the department chairperson as an example, let us consider the way in which the administrative leader functioned. The administrator-leader chairperson occupied this position for a professional lifetime, or at least that was the expectation. Such tenure allowed for development and implementation of the leader's educational ideas and provided continuity and stability for the department. The administrator leader managed the department by selecting and hiring faculty and made decisions regarding retention, promotion, tenure and salary. The administrator leader assigned teaching schedules, appointed persons to committees, developed departmental policies and procedures, formulated the budget, arbitrated disputes between faculty members and/or students, taught classes, advised on theses and dissertations and was the department's undisputed authority figure. The administrative leader assumed leadership in curricular matters, an area where many of our earlier leaders made their most salient contributions. The administrative leader initiated curricular study, charted the direction for change, implemented new directions and continuously evaluated the effectiveness of program offerings. They were creative persons who had the time, or made the time, to think and reflect. They charted the profession's course, for the present and the future.

Of course these administrator leaders displayed great differences in style of operation. Some were democratic and occasionally involved selected senior faculty in certain advisory capacities; others were autocratic, never seeking advise from anyone. Some were benevolent dictators who took care of their faculties; still others were Mother Superior types who offered personal as well as professional counsel to their faculties. Regardless of style, they all had in common ultimate responsibility and accountability for departmental decisions. Faculty accepted these decision, not without some grumbling of course. Managerial decisions could and were made without undue delay. This is the perception of administration with which many of us are familiar.

Despite the changed role of administrators, many faculty members and even administrators still hold the leadership aspect as being central to the job of administration. The concept of what administration entails has changed much more slowly than the actual demands of the job. Many faculties still expect their administrators to provide the intellectual stimulation and vision formerly associated with these positions despite demands faculty have made and won for input into decision-making processes. I believe the administrator-leader concept will be inappropriate for the 1980s.

The Administrator Manager

Tasks that an administrator performs today are more accurately described as those of an administrative manager. The management function of administration is becoming increasingly important at all levels within the university, particularly the departmental level. The administrator manager spends the greatest portion of time maintaining or managing the department. The manager must keep up with diversified demands for information from all university segments; compose complicated, lengthy reports and memos; and complete an array of written forms. The manager must maintain an accurate account of numerous budgets; supervise civil service personnel; facilitate the work of the faculty so they can perform their jobs with minimal irritation; supervise the physical plant; and represent the department in time-consuming, endless committee meetings. In short, the administrative manager must work for the department, not lead it (Scott 1979). No time is left for the traditional educational leadership function. A major departure from the administrator-leader concept is that the administrative manager does not have lifetime tenure. Most often it is a short-term appointment renewable at the faculty and/or dean's pleasure.

While many administrator managers' tasks are the same ones faced by predecessors, the manner in which they are handled differs. For example, the administrator manager does not select faculty; this is a responsibility of a Search Committee. However, the manager must work with this committee and see that the job description is publicized, arrange for interviews, and when the candidate is finally selected, complete the employment forms.

Evaluation of personnel, long a responsibility of the administrative leader, is now done on most campuses by elected faculty committees. They evaluate their colleagues' work and recommend retention, dismissal, promotion, tenure and sometimes salaries. Peer evaluation has necessitated an elaborate machinery for review for those faculty wishing to appeal decisions regarding their own evaluations. The manager must inform individual faculty of their evaluations and provide assistance regarding the process of appeals if so desired.

The important task of department budget preparation now requires considerable faculty input. Budget development is no longer educated guesswork but must be based on precise considerations such as credit hour production, head count, enrollment projections, optimum facility usage and program cost analyses. These data must be provided by the administrative manager but the priorities for program expenditures frequently are determined by faculty. The administrative manager is accountable for fiscal management, as were his predecessors, but budget building based on the cost analysis and accounting procedures required now, more closely resembles procedures used in industry and business, for education *is* big business.

Curricular matters have been traditionally the bailiwick of faculty and this is even more the case today. In this regard, the administrative manager works through faculty committee structures and implements their decisions.

While it is clear that some functions of the administrator manager are shared, others have no clear delineation of the extent of authority delegated by the faculty to, or expected of, the administrator manager. This division of authority leads to the unsolved problem of accountability. Although it is difficult to hold an entire faculty accountable for decisions they make, if faculty are to function in decision-making capacities, they must also be accountable for their decisions. We have yet to figure out how to do this.

The concept of the administrative manager raises another matter—advocacy. Whereas the administrative leader was the department advocate, administrative managers never know when they are an advocate for the department and when they must represent the central administration, for they are expected to do both and are accountable to both.

Not only have the administrative manager's responsibilities changed, but also the perception of how they should be performed. In the future there might be little room for overlooking individual faculty members' inadequacies, for this managerial stance demands a model approaching that of a profit-making organization. If individuals cannot pull their weight, they will be expendable and tenure might not protect them.

Preparation for the Administrator Manager

Minimum preparation for administrative-manager positions should include a background in business practices, financial management, computer science, collective bargaining, communication skills and, perhaps most importantly, personnel management.

Concern for special preparation is not new. In 1972, for example, the Big Ten Symposium had as its theme "Administrative Theory and Practice." Perhaps the most persistent voice in our profession regarding needed change in this area has been that of Zeigler. *Administrative Theory and Practice in Physical Education and Athletics,* edited by Zeigler and Spaeth (1975), is perhaps the first book in our field directly concerned with preparing persons for administrative posts.

Since administrators in higher education must come from the ranks of college professors, for as Eble says "almost no one else becomes an academic administrator" (1978, p. 1) and we must choose from a "limited stock" (Eble 1978, p. 93), it is important to recognize the knowledge and skills required for this position just as we recognize skills required for specific teaching positions.

The challenge of change for the 1980s from the viewpoint of administration requires that we acknowledge the new demands of administration, accept the changing faculty role necessitated by these changes and prepare would-be administrator managers for their position and responsibilities.

Just as the administrative leader provided the impetus for change in the past, so must the administrator manager provide management skills for operating the educational unit of the future. Leadership as a function for change is obviously still needed in education. There must be the thinkers, critics, dreamers, questioners and experimenters who by the force of their logic and enthusiasm lead us into new directions. This leadership must come from individual faculty members. There must also be the managers who handle the day-by-day operations of a complex organization (Scott 1979).

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: A SUPERVISION VIEW

Laurence F. Locke

Supervision as practiced today suffers from the same limitations that bedeviled it 50 years ago. There have been no dramatic breakthroughs in practice. The literature of this dismal art provides scant hope for any significant change in the next decade. In the synoptic vision of Mosher and Purpel (1972), "to read about supervision in 1920 is to read about supervision in 1970" (p. 14).*

Many members of this Academy are veteran supervisors, and nothing said here should denigrate anyone whose personal skill and dedication have made that process work. It is equally true, however, that it does no service to say the emperor is fully clothed when he is naked as a jaybird. Change must begin with a frank appraisal of how things really stand. That sort of honesty will require overcoming some long-standing professional inhibitions.

While we all know supervision is a difficult process, it usually is considered indelicate to dwell publicly on gory details. As Dyer (1977) ruefully observed:

> Mutual respect, professional loyalty and good manners seem to sugar-coat the cooperating teacher/college supervisor/student teacher interaction as though such deference will somehow make the practicum ail that we want—and need—it to be. (p. 1)

Our profession is much in the position of a student teacher described by Iannaccone (1963) who could not produce a half-page daily dairy because she thought she was not supposed to report the real feelings which pervaded her experience—feelings like "horror" at the procedures used by her supervisor. Reviewers have postulated that this same reticence is one root cause of the impoverished literature on learning to teach. "When you cannot say what is on your mind, it is hard to say anything at all" (Fuller & Bown 1975). To avoid that disabling constraint, what follows is as frank and devoid of sugar-coating as it is possible to make it.

Supervision has several possible purposes. As evaluation it is a ubiquitous process designed to make sure somebody else is doing a good job. As skill development it is helping someone else learn how to do a better job. In education we apply the word as a generic term to cover:

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- evaluative inspection of school teachers to generate information used in decisions such as hiring, firing, tenure, promotion and rewards
- efforts by administrators and subject matter specialists to improve teachers' instructional effectiveness
- oversight and tutelage provided by a cooperating practitioner during a student teacher's apprenticeship
- visitations of a training program representative during that same exercise

Each of these functions involves the roles of "observer" and "observed" but the similarity ends there.

Evaluation of teachers and teacher effectiveness as an adjunct to personnel decisions in public schools is a specie of supervision which will be treated here only briefly. It is the source of teacher anxiety, political struggles, moral dilemmas and endless debate (Broudy 1974; Lehman 1974; McGuire 1974). In the last decade, despite public clamor for teacher accountability, supervision as evaluation has been quietly downplayed in favor of models which make improvement rather than judgment the ostensible target. The heritage which lingers on, however, equates supervision with evaluation and thus serves as the main impediment to most systematic attempts to improve instruction through administrative personnel.

It is not without significance that two of the most influential books on supervision in the last decade have been titled *Supervisors and Teachers: A Private Cold War* (Blumberg 1974) and *Supervision: The Reluctant Profession* (Mosher & Purpel 1972). Even Goldhammer's more innocuous *Clinical Supervision* (1969) contains an opening chapter so scathing of educational practice as to have raised serious question about publication.

"Supervision in the schools tends to be a ritualized, sterile process that bears little relationship to the learning of youngsters" is Blumberg's assessment (1974, p. 5) and "utterly worthless" is the way many teachers characterize time spent with supervisors (Blumberg & Amidon 1965). The litany of teacher complaints is as well documented as it is long. Dishonesty, evasiveness, inconsistency and disrespect are among the irritating supervisor characteristics most often singled out (Weller 1976). Although many teachers see a need for help with their instructional problems, most see supervisors as potentially dangerous, largely because the process can use standards they don't share and too often provides incomplete, even dishonest feedback (Heichberger & Young 1975). Supervisors are seen as out of touch, primarily interested in procedural trivia and unsure, insecure and uncomfortable in their work. While context-specific factors are important in determining the quality of relationships (Harris 1972), observers persistently report that many teachers treat supervisors either with indifference or open hostility (Blumberg 1974; Goodlad 1974).

Evaluative supervision in schools is of much less interest to us than supervision in student teaching. It is in that noble triad of student teacher, program supervisor and cooperating teacher that we ourselves are represented. Here the other two meanings of the word supervision are given the form of action as the program's representative encounters the cooperating teacher while they both play supervisor to the novice.

At the outset let me dispel a false impression. While teachers everywhere report the practicum to have been the most important part of their training (Bennie 1964; Hermanowicz 1966; Mason 1961), the pride with which teacher educators point to this fact might have been misplaced. There is a growing suspicion that what teachers really are saying is that *anything* would look good after four years in the typical preparation program (Zeichner, note 12).

My own experience suggests that many teachers consider the practicum as a charade in which they trade compliance for a grade and a recommendation. At least this game is played on the real field rather than in the college classroom, and students appreciate that distinction. The deeper problem, largely unrecognized by students or teacher educators, is that the game is restricted by rules that limit what can be accomplished. As Lortie (1975) has observed, "student teaching may be earthy and realistic when compared with education courses, but it is also short and parochial" (p. 71).

The only discernible outcomes of student teaching are confirmation of the vocational choice as a true possibility and initiation into the realities of school life. Students learn that they *can* teach (the level of mastery need be no more than minimal) and they are socialized into the school's value presumptions. In the latter process, the student learns that the "real" problems are time constraints, student numbers, student diversity and the consequences of compulsory attendence. In response, the student learns to accept the persona of the teacher—aloof and authoritarian—and assimilates the teaching culture's central ideology which makes pupil control through management skills the hallmark of competence (Iannoccone & Button 1964).

Beyond this, what do we know about the organic details of student teaching? Lamenting over the fact that nobody seems to know the answer has become a ritual in education (Davies & Amershek 1969; Peck &

Tucker 1973; Fuller & Bown 1975; Turner 1975). The most recent reviews of literature in both education (Zeichner, note 12) and physical education (Oien, note 4) conclude that our lack of intimate knowledge about what happens to student teachers is a consequence of overreliance on research in the psychometric tradition. If we are to improve student teaching, we must understand it. Social-anthropological techniques involving first-hand observation of the triad as it functions *in situ* offer one strategy. The appropriate question at this stage is not "Are we right?" but "What is out there?" (Fuller & Bown, p. 52).

That these same reviewers persistently concern themselves with "improving" student teaching suggests, however, that the maligned psychometric tradition has managed to raise some serious questions. A closer look at individual studies reveals enough evidence to question the viability of student teaching on any of a dozen counts (Iannaccone 1963; Goodlad 1965; McDonald & Zaret 1971; Sorenson 1974; Salzillo & Van Fleet 1977). Edgar Friedenberg (1973) was not the first to recommend we get out of the student teaching business altogether.

At the outset you can rest assured that program supervisors play no negative part. This is because college supervisors play no significant role at all. Studies repeatedly document that the cooperating teacher is the dominant source of influence (Evans 1976; Friebus 1977; Karmos & Jacko 1977). Yee (1968) found that interpersonal relationships within the triad seldom reach a level of involvement worthy of professional consequence and that relations generally deteriorate as the semester proceeds. There are no identifiable effects produced by the program supervisor (Schueler, Gold & Mitzel 1965) and it is impossible to distinguish between students who have and do not have program-based supervision on the basis of either performance or adjustment (Morris 1974).

What do student teachers learn from cooperating teachers? As suggested above, they learn that answering the question "What works?" is the purpose of student teaching. In resolving the problems of running a class they learn to treat techniques as ends rather than as means (Iannoccone 1963; Popkewitz, note 5; Tabachnick et al., note 9). The purposes of teaching are defined as getting through the lesson on schedule, without disruption and without violating the canons governing interaction with clients—distrust of students, stress on order, punitiveness, moralism and authoritarianism (Hoy & Rees 1977). If student teaching in the gym is much like the classroom intern experiences described by Tabachnick (note 8), the focus on routine, utilitarian skills will be in sharp contrast to the student-centered, learning-centered rhetoric of the training program.

Studies involving a wide range of psychometric pre-post measures reveal a pattern of contingencies and consequences. Student teachers with more hostile, authoritarian attitudes get higher supervisor ratings (Chabassol 1968), as do those who are more dogmatic (Johnson 1969). Student teachers become more rigid and less liberal (Jacobs 1968), less pupil-centered (Walberg et al. 1968), and more other-directed (Horowitz 1968). Student teachers quickly develop strong bureaucratic values (Pruitt & Lee 1978) and subordinate themselves to a control ideology (Hoy & Rees 1977; Salazillo & Van Fleet 1977). In sum, they learn how to get along in the school, an exercise adapting new personnel into old patterns. How well they learn these lessons is demonstrated by the substantial correlation between supervisory evaluations derived from student teaching and those derived from the first year of teaching (Labriola 1965).

If you wonder whether all of this could be true in physical education, there can be no final answer because we lack adequate research. In a memorable analysis of socialization constructs, however, Burlingame (1972) suggested that physical educators should not expect to find themselves exempt from the powerful forces which shape other teachers, a conclusion recently confirmed by Templin (1978). By combining research techniques from both psychometric and ethnological traditions (itself a significant advance in research design), Templin found that student teachers promptly rejected behaviors learned in the training program and taught physical education classes just as they might have done four years previously given only the basis of their student experience in public schools.

In an earlier study of student teaching behavior, Mawson (1973) was puzzled by the complete absence of any change between the third week and the end of the internship. Some reflection on Templin's work (note 10) suggests that the answer lies in the fact that student teaching in the gym demands quick imitation rather than exploration and gradual evolution of a personal repertoire of teaching skills.

If student teaching, supervisors and training programs are so insignificant in shaping teachers' work, where does that process occur? All evidence points to the first two years of employment (Ryan 1965; Lortie 1966; Fuller 1969; Fuller & Bown 1975; Lortie 1975). It is there, in the solitary process of personal trial and error, accompanied only by the ghosts of fondly remembered models, that young physical education teachers construct behavioral patterns that will dominate a career. The difference between this process and the making of practitioners in other professions is striking. None of the intense camaraderie and shared perspectives of the hospital or law office here (Lortie 1959; Becker et al.

1961). Learning to teach is a private ordeal, not a process "well suited to inculcating commonly held, empirically derived, and rigorously grounded practices and principles of pedagogy" (Lortie 1975, p. 79).

Is there no cheer in the land of supervision? Of course there is. Mackey et al. (1977) have suggested that training supervisors in the specific skills needed to work with beginning teachers should be a priority of teacher training institutions. This strategy has been demonstrated in education (Perrodin 1961) and physical education (Lucas 1974) with modest but encouraging results.

Physical education literature contains several interesting attempts to distinguish between effective and ineffective supervisory techniques through critical incident research (Wright 1965; Gibson 1969). Several research summaries reveal the status of supervision in the gym (Chasey 1969), although a close reading reveals less than sanguine conclusions (Cornett 1966). More important for the future is that several observation instruments have been designed for recording and analyzing supervisory behaviors (Weller 1969) and at least one has been used successfully in gymnasiums (Kraft 1974).

Taken in the abstract, either as a sensitive art form or as a set of theoretical propositions, supervision has developed sophisticated models for practice. The traditional paradigm for supervision, with its characteristic emphasis on teacher defects, perfunctory ritual, teacher passivity, brevity and the supervisor's expertise and personal commitments (Reavis 1978), now has a wide range of rivals. Clinical supervision (Goldhammer 1969; Cogan 1972; Reavis 1978), criterion-referenced strategies (Popham 1969) and supervision based on counseling theory (Mosher & Purpel 1972) have attracted national attention and generated at least local enthusiasm. Each provides a unique strength. Clinical supervision structures a complete reshuffling of teacher and supervisory roles and introduces analysis based on hard data. Criterion-based supervision elevates clear definition of objectives and measurement of outcomes to the place of highest priority in judging the quality of teaching. Counseling supervision presumes a commitment to deal with the teacher as a person rather than solely as the source of instructional behaviors.

In physical education we are in the happy position of having excellent experimental work on new forms of supervision. Under John Cheffers (Boston University) and his colleague Victor Mancini (Ithaca College), interaction analysis has been used as a supervisory mode to produce significant changes in teacher behavior (Keilty 1975; Rochester, note 6; Vogel, note 11; Getty, note 1).

An extensive effort to investigate a behavior analysis model of supervision has been undertaken with the guidance of Daryl Siedentop at Ohio State University (Siedentop, note 7). Applied behavior analysis emerges from a well-defined view of learning, thus providing a system of influence yielding unusual potency when applied to supervision. The OSU research program has demonstrated (and often replicated as well) that through applied behavior analysis:

- the supervisor can change student interns' teaching behavior (Rife 1973; Hughley 1973)
- the same effects can be produced when university and school supervisors work as a team (Boehm 1973; Darst 1973; Hamilton 1973)
- peer supervision in student teaching can do likewise (Dodds 1975)
- peer supervision requires much different handling if it is to succeed as an early field experience (pre-student teaching) program component (McMillan, note 3)
- the "self as supervisor" is a viable construct (Dessecker 1975).

Perhaps more important for the present purpose was the demonstration that a cooperating teacher can assume the role as supervisory change-agent either through special training (Hutsler 1976; Cramer 1977) or as an outcome of participation in a behaviorally-based teacher center established at the school site (McKenzie 1976).

These pioneering research efforts have yet to demonstrate the long-term maintenance of behaviors induced through such supervisory procedures. Research provides only indirect evidence concerning the relation of many teacher behaviors to the ultimate criterion of student learning. These genuine limitations, however, must not obscure the importance of what has been accomplished. The studies at Ohio State have provided the *first absolute confirmation* that it is possible to induce *any* specific behaviors in a group of working physical education teachers. These programmatic research efforts in applied pedagogy also stand as models of scientific maturity to be emulated even by the academic disciplines in our field.

A continuing problem with all of the new forms of high-impact supervision is their relatively high cost. In terms of human and fiscal resources they demand vastly more input than teacher development has ever received at any education level. Strategies such as peer supervision, group supervision and self-monitoring systems are, in part, attempts to find a way out of this dilemma. Unfortunately the judgment on cost effectiveness for any system of instructional improvement too often rests on the issue of student achievement. In the short run, supervisory systems are unlikely to produce significant impact on product measures. More abstract indices such as teacher job satisfaction, student activities and subtle changes in the school's social climate are more likely places to seek the consequences of supervision. These often are too distant for an impatient and dollar-conscious public.

Improving supervision is not the real challenge of the next decade but only part of a larger, more significant problem. Improving what supervisors do with young teachers would be a waste of time and resources unless accompanied by change in the system of influences within which supervision operates. The challenge of the 80s is a challenge which can be accepted only at the systemic level.

Substantially improving the physical education delivered to pupils by attempting to alter the behavior of teachers already in the field is unrealistic. Our target must be new teachers, if only because recruitment, initial selection and pre-service training are the sole points over which we exert any measure of control.

The pivotal problem turns out *not* to be a matter of current programs failing to produce graduates with a superior vision of what physical education might be. Even with their limitations, the typical program today turns out teachers who initially are prepared and inclined to teach in ways easily superior to the qualitative norm in public schools. Once employed, however, they don't do it—and there's the rub!

Teachers do not learn to teach in training programs, but in the first years of service. The real tutors are students, past models and the young teacher's solitary, trial-error efforts to cope with the tasks of teaching. The results of that tutelage too often is a kind of teaching which looks much the same from generation to generation (Hoffman 1971).

If there is to be change for the 1980s, or ever, we must begin with a correct formulation of the problem. This appears to be "How can teacher educators take control of the real sources which teach teachers how to teach?" We can guess that the answer involves two disparate but related elements. Pre-professional students must first be immunized against the perception that they have to accept all values of the school and all traditional assumptions about teaching if they are to survive in the gymnasium. Given that protection, young interns must then receive intensive, supervisory assistance while they gradually learn how to function effectively as self-directed teachers.

A Program to Develop Effective Teachers

This paper closes with some suggestions for creating a program to develop effective, self-directed teachers. Such program must provide

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an intensive relationship between faculty and students involving great investments of time, attention to detail, creative energy, affect and personal commitment. Assuming there is no expansion of resources available to most programs, this means fewer students, perhaps one third the number who currently reach the clinical levels of our programs. Selective retention is the only professional way to achieve this goal.

With this small group of students, the program must undertake four central tasks:

- attenuate the cumulative effects of up to 15 years of student pre-socialization which has provided powerful models of teaching, many of which are dysfunctional
- provide a thorough conceptual basis for critically examining and reflecting on experience as a teacher
- provide a detailed and realistic description of the social and political realities of schools as they exist and some understanding of forces brought to bear upon beginning teachers.
- assist students through the early years of teaching so that they receive certification as professional practitioners at the end of a gradual apprenticeship, supported at every step by a variety of supervisory inputs, all designed to help the trainees master the business of teaching without having to pay the price of accepting life in the gymnasium as it now exists.

To accomplish these tasks, the essential elements of the program would have to be reorganized to include the following:

Element I: More extensive performance training (practice in execution of teaching tasks) that is directly coupled with much greater emphasis on pedagogical theory. When professional courses are called "too theoretical," students don't mean that they are too full of substantive ideas about how teaching works. They mean the course (and the professor) is too out of touch with the realities of the actual work of teaching. We do *not* need more field experiences or more courses in curriculum and instruction. We do need more intensive experiences in which students and professors struggle together to understand first-hand encounters with teaching in terms of pedagogical theory.

Element II: More opportunity for students to examine and clarify their own values about teaching, education, play, compulsory schooling, competition, growth, loving, freedom and morality as the central themes of life in the gymnasium. This means formal provision for such encounters and the presence of faculty leaders skilled in humanistic education as it applies to physical education (Griffin, note 2).

Element III: Replacement of student teaching as it presently exists with an experience which strengthens students' ability to understand and resist regressive school forces. In lieu of student teaching, a practicum would serve as the field extension of learning experiences directed at developing a rudimentary understanding of the school's social dynamics. In the semester preceding the practicum, students should have studied educational sociology and the anthropological tools of ethnology. They should demonstrate minimum competence in both domains by undertaking a participant observation study (supported by a concurrent seminar) of "who does what to whom and how" within the context of their practicum setting. Their participation should include all aspects of school life but be limited in terms of time, responsibility and expectations. The primary focus of student teaching would be to "develop an awareness of the social and cultural dynamics which operate within the educational setting" (Salzillo & Van Fleet 1977, p. 30) so that students can examine their own assumptions in light of an experience that is at once real but also not totally cooptative.

Element IV: Extension of program responsibility during at least the first year of employment by arranging for students to spend that year as paid interns. Program completion and professional certification must take place after, not prior to, entry into full-time teaching. All of the supervisory resources of the program and its associated schools must be brought to bear at this vital point. The internship must be gradual and progressive, assigning new responsibilities only as capacity develops. At each step, collegial help must encourage the teachers to analyze and evaluate their work as they evolve teaching styles grounded in their own understanding of personal and community values.

Changing supervision begins with changing supervisors, and changing teacher education begins with changing teacher educators. Serious attempts to implement program elements such as these would demand renewed interest in pedagogy, curriculum and the social foundations of education. Painful changes in allocation of resources and the difficult process of faculty re-education would be required. Above all, in many departments a long-term faculty development effort would be needed to bring the kind of instruction used by professors into reasonable congruence with the teaching behaviors they urge upon student majors.

In the end, the purpose of the program is not to produce graduates who are at war with the schools but to help young teachers understand themselves and the school well enough to master the technology of teaching while still remaining healthy agents for change. The goal of supervision within this kind of program is to nurture young teachers free to wiggle out a work space within which to be better teachers.

THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: METHODOLOGY VIEW

Robert N. Singer

In this presentation the writer will attempt to put to rest certain major conflicts and propose a valid methodology to improve instruction and, in turn, learning. This paper will thus identify various teaching approaches, propose a resolution and suggest a procedure to enhance instruction and learning.

Approaches to Teaching

Teaching styles that are most popular reflect the leading movements of their time. What will be explored here, however, is not various teaching styles but whether a sound basis exists for these styles.

Physical education activities can be experienced in a formal setting, with the teacher playing the major role. Skills can be learned by means of drills or in trial-and-error fashion. The learning process can be programmed systematically so that learning is individualized rather than group-oriented. Student behaviors can be molded. The individual processes of exploration, problem solving, and creativity can be developed. The learning environment can encourage mastery of skills, attainment of information or development of problem-solving processes and interpersonal relations.

In a chapter entitled "Theories of Teaching," Gage (1964) states that teaching can be analyzed according to at least four criteria:

- teacher activities
- educational objectives
- components corresponding to those of learning
- families of learning theory

Teacher activities include all those in which the teacher engages, that is, everything that is done. *Educational objectives* determine the particular direction teaching will take. For instance, major categories of objectives have been developed for cognitive, affective and psychomotor domains, and subsequent teaching attempts to fulfill these objectives. (Obviously, physical education objectives lie primarily in the psychomotor domain.) *Components corresponding to those of learning* are contained in teaching; thus teaching mirrors learning. "Components of teaching might be 'motivation-producing,' 'perception-directing,' 'response-eliciting,' and 'reinforcement-providing' " (Gage 1964, p. 276). Three *families of* *learning theory*—conditioning theory, identification theory, and cognitive theory—describe different kinds of learning.

Role of Models and Theories

Bain (1978) has recommended using a model for selecting, structuring and sequencing content in a physical education program. I agree. Some model is needed for philosophical and practical purposes. Formulation of a curriculum might be consistent with one of the following approaches. It might be based on *movement form*, which reflects local cultural importance. Or, it could reflect *movement analysis* (body awareness, space awareness, and understandings). An orientation to the *discipline of human movement*, or a body of knowledge, suggests emphasis on knowledge about movement. The *developmental stages approach* is very widely used in physical education, and activities are offered to students, depending upon their motivational and developmental readiness. *Motor learning task analysis* leads to a curriculum of activities representing different types of behaviors. Finally, consideration for student *motives or purposes* would lead to a curriculum based on values or personal choices, a humanistic approach. A particular model, which reflects a personal philosophy about the formation of a curriculum, leads to unique curricula designs.

One purpose of teaching models and learning theories is to suggest logical teaching styles that will best encourage and promote learning. There is no one accepted theory. Owing to the youthfulness of the psychology of learning, theories are incomplete, many questions are unresolved, a number of research findings are contradictory, and there is no particular behavioral technology to turn to. Suggestive evidence supports various popular teaching and learning strategies. However, there is no major solution or easy way out.

Kerlinger (1977) proposes that theory is the systematic presentation of phenomena and relationships to explain and predict phenomena. However, he is somewhat pessimistic about the connection between research and educational practice. There is still a significant gap between the two. Likewise, Locke (1977) is critical about research on teaching physical education and considers its nature, direction and practical utility to be in a dismal state. Cautiously optimistic, nevertheless, he writes that "the new science of research on teaching physical education is only a fledgling, but if its significance is recognized it can be nurtured and made to grow" (p. 13).

When better research data have been accumulated and synthesized, theories can be devised more accurately. Instruction should be improved.

Current efforts are in this direction. Until satisfaction is attained with research and theory, the technology of teaching will have to proceed partly on the basis of common sense and logic. Indeed, it always should anyway. Yet Dunkin and Biddle (1974) have written an excellent book in which they state that sufficient research has been completed concerning teaching. They believe that "the study of teaching is the heartland of the research effort that should govern education" (p. viii).

Perhaps a major problem in the past was the attempt to determine one right way of teaching, as if such existed. A more realistic stance is to appraise a particular approach to teaching according to instructional goals and types of students involved. Consider the following situation. High school students in a physical education class are engaged in a unit entitled "basketball." Compare the following teaching approaches.

Case 1. The teacher, Miss So Ciale, has brought the students together to discuss the matter that basketball is a team sport and that team members must cooperate to fulfill a common goal. Proper team attitudes, human relations, sublimation of individual objectives for team objectives and sporting conduct constitute the substance of this interaction. Discussion and dissent are encouraged. Through carefully planned means of communication, So hopes to have the students realize that sport is an excellent vehicle for developing cooperative behaviors, ideal human values and good citizenship.

Case 2. Mr. Cree A. Tivity is encouraging students to discover how each can individually express him/herself on the basketball court. The prime theme is the individual experience rather than organized team competition. Each student is encouraged to move and execute within the constraints of personal structure, personality and skill level. There is no intent to make the students conform to one style or do similar things at the same time. Instead, Cree feels that students should develop their self-image, come to understand the limitations and possibilities in their movement, and experience feelings of achievement and satisfaction according to personal standards rather than those of the group.

Case 3. Mr. Org Anization is explaining basketball fundamentals to his students. He believes in providing instruction that will lead to high skill levels. The ability to perform well and experience the pleasures of excellence is of top priority. Carefully planned instructions and drills follow. The students learn to execute precisely and similarly, for Org knows that excellence in basketball playing is achieved only after many hard, dedicated and carefully guided hours of practice.

Obviously, all three styles can be effective and each meets certain goals better than the others. Alternative teaching styles are described brilliantly by Mosston (1966, 1972). If each teacher handled a given assignment appropriately, we could not legitimately favor one style over another. But if particular goals were specified for a particular group of students, we would have some basis for choosing one teaching approach over the others.

Joyce and Weil (1972) have observed and analyzed teaching behaviors in many classroom settings. After carefully reviewing them and many concepts of teaching and learning in education in general, they formulated four teaching models which they entitled information processing, social interaction, personal sources and behavior modification. When analyzing objectives and teacher activities in physical education classes, the models do not seem to hold up entirely and need to be restated. Therefore, as we examine possible learning outcomes and compatible teaching models, at least four distinct models can be derived and identified. The boundaries are not clearly defined. Overlap occurs on occasion. But the major emphases on certain processes and intended outcomes serve to distinguish the models from each other in a convenient fashion.

Teaching Models

Teaching models in physical education emphasize the following processes: skill and knowledge content acquisition, socialization, personalization, and learning.

- *Skill and knowledge content acquisition process.* In this model, attention is focused on efficient acquisition of specific skills and information. Mastery and achievement are the major intentions with regard to student outcomes. Group and individualized instruction have been developed to strictly guide students through learning material to intended attainment levels. Highly guided and prompted learning highlight this model.
- *Socialization process.* Improved social relations, the ability to relate to others, is the theme of this model. Experiences in human relations, communication, interaction and understanding others underlie the teaching models in this classification.
- *Personalization process.* The intention behind this model is to use physical activity to develop personal qualities. Self-confidence, self-realization, self-concept (image), enjoyment, and satisfaction represent "personal states" that might be influenced. Likewise, responsibility for decisions and performance outcomes is taught to students. Students' intrinsic motivation toward activity selection and perseverance is another personalized attitude with which the teacher might be concerned.

- *Learning process.* This model focuses on students' learning abilities and processes. Techniques to help them analyze activities and situational demands, to use thought processes, to problem solve, and to create are stressed. Emphasis is on process rather than content, and individualized approaches and behaviors are encouraged.

The general teaching model used will influence instructional strategies and settings and, in turn, goals realized. One approach emphasizes the teacher's role and another the student's role as to decision making and the nature of class activity. Invariably a teacher formulates (or should formulate) a priority order of objectives which, in turn, leads to a basic teaching model, while other models can be used on occasion to help fulfill lower priority objectives.

Beyond Theory

These teaching models and others suggest instruction alternatives. Each is suited to realizing certain objectives. Often styles are combined. All can and do produce learning. Some teachers look for alternatives in instruction while others are comfortable with traditional techniques. In different schools or within the same one, one sees diverse approaches to the teaching of physical education. Although in recent years the trend in education in general has been toward individualized learning, the unwieldly size of the typical physical education class encourages teachers to assume a more dominant role in instructing for normative group behaviors while being sensitive to individual differences.

Some teachers attempt to reach broad-based educational and physical education objectives while others remain true to learning theory or behavioral principles. Still others operate on a loosely structured, day-to-day basis. Many valid questions concerning student betterment have been raised by dedicated physical educators, but a satisfactory resolution still remains because of discrepancies in general objectives, teaching techniques, interpretation and use of research and learning theory, and the process of putting it all together.

Regardless of the teaching method, it is usually apparent that the way it is employed can be open to criticism. The implemention of a particular teaching style should reflect careful systematic planning. It is one thing to work with objectives or theory and something else to break down a course or unit into meaningful sequences. Are the objectives of the course specifically developed in behavioral terms? Can they be accurately evaluated to see if they are attained? Are they practical? Have limitations on space, equipment, time and human resources been considered? If so, how? Are the students' entry skills, characteristics and attitudes specified and considered when formulating the program and objectives?

Students differ in learning styles and receptivity to a particular instructional approach, a point explained well by Wiren (1977), using the learning of a particular golf swing as an example. Individual differences in performance techniques should be recognized, but not in violation of basic principles and laws.

Instructional Decisions

Before discussing the systems approach, let us briefly review the need to identify considerations in the development of instructional procedures, a process closely allied to the systems approach. Perhaps an objective is to have students gain competence in a particular skill. What then? Decisions about instructional procedures should be made following: a situational analysis (see Figure 1 below), a task analysis, a student analysis, and the application of a systems model approach to instruction (see Figure 2, page 83). An analogy has been made by this writer elsewhere (Singer 1978) for decisions in the use of media in physical education.

As to situations, we can see in Figure 1 that instructional decisions can impact upon the learner prior to, during or following performance. Different processes operate in sequence or overlap as students attempt to master a skill.

Activities can be viewed according to situational circumstances and response demands. They can be analyzed hierarchically (lower order to higher order sub-tasks) or vertically (sequence of sub-tasks). Task analysis

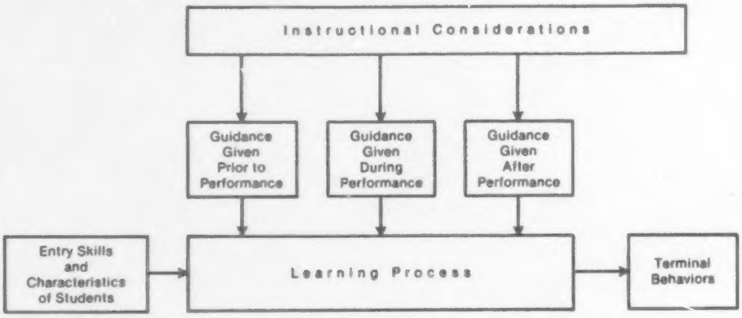
Instructional Considerations
Guidance Given Prior to Performance
Guidance Given During Performance
Guidance Given After Performance
Entry Skills and Characteristics of Students
Learning Process
Terminal Behaviors

Figure 1. Considerations for achieving terminal behaviors in psychomotor skill learning (Singer 1977, pp. 113-122).

involves identifying and classifying performances that are the outcomes of learning and subordinate performances that are prerequisites to such learning. In other words, a task analysis suggests the demands that most students confront when trying to master that task. Implications can be drawn for favoring certain instructional procedures over others.

Likewise, students can be analyzed according to potential capabilities and past experiences with regard to learning situations. As an example, beginners and the more highly skilled may benefit in different ways under certain conditions. Even learners at the same skill level might have different preferences as to learning mediums.

Table 1, which is an extension of Figure 1, outlines the major considerations in instruction to enhance the learning process. Of course, imagination and creativity on the part of the teacher help improve possibilities. Putting it all together, systems models provide an operational framework within which teachers can consider the most important variables in student learning and make scientifically sound and logical decisions. Although Figure 2 provides one type of model, many other excellent ones exist which might differ in terminology and preciseness, but not in any fundamental way.

More and more references dealing with systematic approaches to instruction are becoming available (e.g., Davis, Alexander & Yelon 1974; Dick & Carey 1978; Gagné 1977; Gagné & Briggs 1974; Singer 1977).

Table 1 Considerations for Instructional Design

- A. General Considerations
  - 1. Task demands (physical, psychological, abilities, etc.)
  - 2. Student skill and knowledge level
  - 3. Range of student capabilities
- B. Instructional Organization: Guidance Required Before, During and After Practice
  - 1. Before
    - a. Stated objectives and expected competencies
    - b. Models or standards of reference
    - c. Explanations and directions
  - 2. During
    - a. Cues and prompts (the objective is to reduce external control and move to intrinsic control)
    - b. Sufficient goal-directed practice
    - c. Motivational sources
    - d. Task sequencing
    - e. Practice techniques
  - 3. After
    - a. Augmented feedback
    - b. Reinforcement

With the advent of systems models and greater concern for the science of psychoinstructional design (e.g., Glaser 1976), their possible advantages in learning situations are being increasingly analyzed.

Students should know what is expected of them. Teachers are obligated to plan students' experiences carefully. To consider all the factors impinging on the learning process and to organize experiences in a logical approach demand considerable teacher effort. *Accountability*—to students, parents, administrators, and the public—requires teachers to take class assignments more seriously than ever before. To be most effective, a teacher must be both practitioner and theorist.

One possible means for realizing teacher accountability is the *systems approach*, a methodology that forces the teacher to do more than appear before a class with objectives sketched out in a traditionally hazy fashion. The systems approach is one way to improve the public's opinion of education and educators.

A Systems Model

The systems model in Figure 2 is a sequence of steps or activities that must be undertaken by the teacher if instruction is to be effective. Any systems model suggests that the burden of providing quality education lies with the teacher. Since time does not allow a detailed description of the planning activities contained in the model, each will be defined only briefly:

- *Instructional goals* describe instructional outcomes, usually derived from a more general educational goal, which indicates what students will know or be able to do following instruction.
- *Instructional analysis* is a process identifying subordinate skills which must be learned to achieve an instructional goal.
- *Entry skills, knowledge and characteristics* are behaviors a student must be able to perform before receiving new instruction. The behaviors are usually determined through the use of instructional analysis techniques.
- *Performance objectives* are specific descriptions of what a learner will be able to do, conditions under which the behaviors will be performed, and the criteria used to judge the performance's adequacy.
- *Criterion-referenced evaluation instruments* are tools developed specifically to assess behaviors described in one or more performance objectives. Typically a cut-off score is given indicating the criterion level which must be met for a student to "pass."

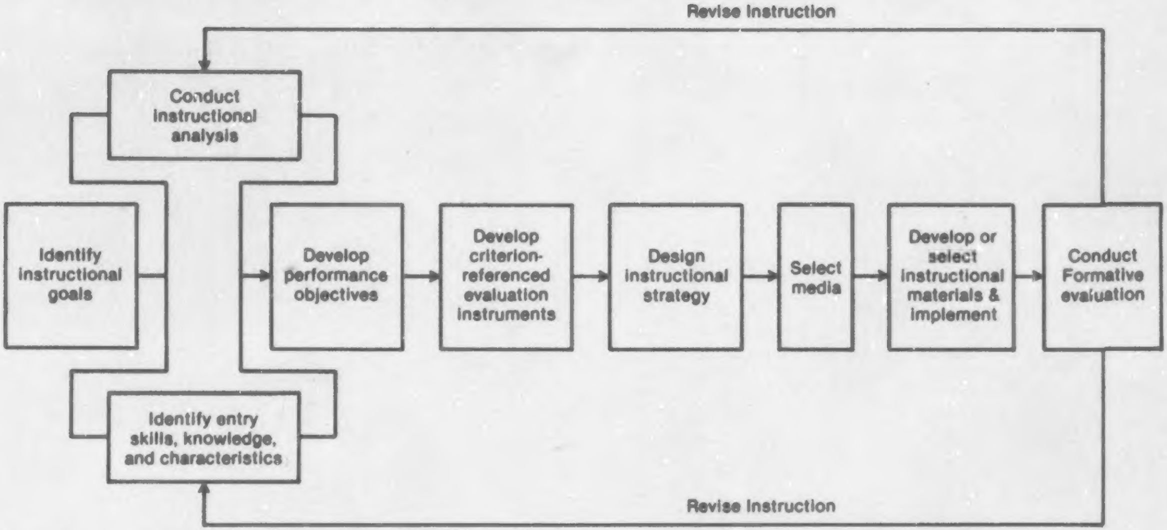
Revise instruction
Conduct instructional analysis
Identify instructional goals
Develop performance objectives
Develop criterion-referenced evaluation instruments
Design instructional strategy
Select media
Develop or select instructional materials & implement
Conduct Formative evaluation
Identify entry skills, knowledge, and characteristics
Revise instruction

Figure 2. A systems model (Singer & Dick 1974).

- *Instructional strategy* is represented by a predetermined set of activities which, in combination, are designed to result in effective instruction. A strategy typically includes preinstructional activities, information presentation, student participation, testing, and follow-up activities.
- *Media* refers to materials and equipment that can be used to partially replace or supplement instructional and/or evaluative procedures.
- *Formative evaluation* is the process of collecting and analyzing data to improve instruction procedures and materials through revision.
- *Revision* refers to modifications to be made in any instructional activities, based on evaluations and feedback.

This particular systems model has been described in brief form (Singer 1974) as well as in detail (Singer & Dick 1974). As we look toward the 1980s and increased concerns about educational accountability, systems approaches will probably be adopted increasingly, as has been the case for a number of years in industry, business and the military. These approaches represent sound techniques for realizing desirable instructional outcomes. The demand is and will be for more creativity in instruction and sound decisions based on research wherever quality research is available.

Summary

Learners can benefit from any one or a combination of instructional methodologies. The systems approach offers concrete guidelines and a sound operational basis for instructional decisions. In turn, experiences can be planned to help students attain worthwhile educational goals and instructional objectives.

Effective teaching reflects personal motivations and energies, creativity, common sense, flexibility for situational demands, and a sensitivity to student differences. All children should develop, learn and achieve within their personal constraints. Research and theory provide ever-improving guidelines for systematic planning of instruction. The 1980s should take us closer to the acceptance, implementation and wedding of humanistic and behavioristic orientations, of science and art foundations, and of technological and humane perspectives.

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THE CHALLENGE OF CHANGE FOR PHYSICAL EDUCATION IN THE 1980s: A MEASUREMENT VIEW

Margaret J. Safrit

The area of study known as measurement in physical education can be likened to a chameleon. It can assume a variety of descriptions, depending upon the interpreter. Perhaps the most widely accepted view of measurement in physical education is the process of developing and interpreting measurement tools to be used by teachers and researchers; thus, the inclusion of measurement courses in physical education curricula is almost universally accepted. At another level, the identification of measurement as a professional area of study points to the appropriateness of applied research in our field. However, because these applications are made to specific measures in other subdisciplines and professions in our field, the classification of measurement as an area of specialization in physical education seems questionable to some colleagues. In yet another corner of academia, measurement in physical education is described as a subdiscipline and, therefore, a legitimate area of specialization in our field. Certainly this view is not universally accepted by colleagues in other physical education subdisciplines. Indeed, pockets of resistance to this type of classification exist today. I would like to be able to say that a full-fledged battle is underway to establish measurement as a valid area of specialization in physical education. However, at best it is a skirmish, partly because of the small number of measurement specialists and partly because other colleagues are too busy establishing credibility in their own areas of specialization. Furthermore there are few, if any, planned strategies for attack.

Measurement as an area of study has suffered from misconceptions and limited interpretations throughout the 20th century. Note, for example, a statement made in 1918 by Edward L. Thorndike, the father of educational measurement. "Whatever exists at all, exists in some amount. To know it thoroughly involves knowing its quantity as well as its quality" (Thorndike 1918). Unfortunately, we tend to hear more frequently the following misquote: "If a thing exists, it can be measured. If it can't be measured, it doesn't exist." While both statements might be controversial, there are vast differences in interpreting them. Obviously, misconceptions about measurement extend well beyond the boundaries of the measurement area in physical education.

What does the future hold for measurement specialists in physical education? Are they destined to serve as corner druggists in small towns, dispensing information on available tests, writing prescriptions for the development of new tests, and educating each new generation of consumers on the basics of test theory? Certainly these are worthwhile endeavors, but other dimensions of measurement also merit attention from psychometricians and edumetricians in physical education. Will measurement specialists forever more be equated with statisticians? While there are definite ties between statistical theory and measurement theory at certain levels, measurement specialists, at least among themselves, retain an identity separate from statisticians. In fact at a meeting of edumetricians in Toronto last spring, participants were observed to display overt amusement in repeating the poet W. H. Auden's quote: "Never sit among statisticians, nor commit a social science."

Applied Research in Measurement

The predominent view of the measurement area, that of an applied area in our field, is not surprising in light of the prototype established by specialists such as Charles McCloy, Gladys Scott, Ruth Glassow, Harold Barrow, Marie Liba and Harrison Clarke.

What type of applied research has been conducted? Studies have been designed to examine sources of error affecting test scores. During the 1970s several new tests were developed; however, the total test development picture is bleak. Few new motor performance tests are available; even fewer cognitive tests have been published in recent years. The affective domain has received the greatest amount of attention during the 1970s. At least three relatively sophisticated instruments measuring affect have been developed on a theoretical basis and subjected to various levels of investigation (Kenyon 1968a, b; Sonstroem 1974; 1976a, b; Martens 1976).

Other applied research thrusts represent the concurrent and predictive validity of measures, particularly indicators of physiological attributes. For example, numerous studies have been published on the prediction of body composition and cardiorespiratory efficiency. There has been considerable interest in the selection of a criterion score, in particular whether one should use the best or average score. Both the applied and theoretical dimensions of this issue have been examined (Johnson & Meeter 1977).

Theoretical Research in Measurement

In general, research within a theoretical framework by investigators in measurement in physical education has been rather sporadic. Isolated theoretical topics have been investigated in doctoral dissertations (Korell & Safrit 1977; Stamm & Safrit 1977; Stamm 1978). Several investigations have been conducted on the reliability of motor performance measures (e.g., Baumgartner 1968, 1969), and despite the controversy surrounding absolute, constant and variable error, the theoretical treatment of this issue has been limited (Schutz & Roy 1973). In several studies a stochastic model has been applied to scoring systems in selected sports (Renick 1977; Schutz & Kinsey 1977). As a final example of theoretical studies, there has been one attempt to use an exponential model to estimate change scores in physical education (Hale & Hale 1972). Thus research in measurement, while making meaningful contributions to the profession, has not generally included scientific research involving measurement theory.

What constitutes legitimate theoretical research in measurement? A generally accepted view encompasses building theoretical structures, testing them for internal consistency and subjecting selected aspects to empirical tests. In the measurement area, it involves developing test theory models, which essentially is the process of using mathematical models, based on the axiomatic theory of probability, to analyze test score data. In addition, each model introduces further assumptions concerning the simple properties of test scores. To varying degrees, existing measurement models have been tested empirically by making predictions from the models and determining if these predictions are substantiated by written test data. Thus, scientific research in measurement includes, at least in part, the application of logical and mathematical analyses to the assumptions of a measurement model and empirical validation of a model.

It is not surprising that measurement specialists in physical education have made few contributions to the development and analysis of a measurement model. Such involvement requires a strong background in test theory, mathematics and statistics. This line of investigation has been allocated to theoreticians in measurement. However the state of the art in physical education seems to be gradually shifting to include more theoretical elements within the subdiscipline. The University of Wisconsin has initiated tentative discussions on the need to develop a measurement model appropriate for tests using *repeated measures*. Exploratory work on a mathematical model for improvement scores is underway at the University of Georgia. The impact of this type of scholarly work in measurement will probably not be felt until the mid to late 1980s. Meanwhile, studies of the empirical validation of models, a less comprehensive endeavor than the development of a new model, are already being undertaken in our field. The criterion referenced measurement model is currently under investigation at the Universities of Wisconsin and Iowa, and limited evidence is already available on the extent to which theoretical models fit motor performance data (Safrit & Stamm 1978; Yeates 1979). Results applicable to tests in the field should be available in the early 1980s. Certainly the theoretical work in measurement theory, as it applies to motor performance data, is at a fledgling stage from an academic standpoint.

I would like to discuss the potential future for measurement in the 1980s under three categories: psychomotormetrics, physical edumetrics and criterion referenced measurement. Because of the small number of measurement specialists in physical education in the United States who have the appropriate background to conduct theoretical research, the extent of the contribution in any one of these categories will probably be limited initially. Outside funding available to these researchers, of course, will certainly affect the extent of their work.

If sources of federal funding can influence measurement practices in this country, the use of measurement techniques in our educational system in the 1980s might reveal interesting new perspectives in educational measurement. The following quote from the 1979 announcement on research grants from the National Institute of Education best describes their projected plans.

> The essential form and structure of educational testing has changed little in over 50 years, in spite of the marked changes that have occurred in psychological knowledge and technology in this half century. A number of recent developments, such as new cognitive models of human learning, greater understanding of the cultural factors affecting performance, and the rapidly declining cost of computer capability, now promise to provide a basis for new forms of testing. NIE is interested in supporting research that examines how these advances and knowledges can be used to increase the instructional value of testing practices and procedures. (National Institute of Education 1979, p. 10)

This NIE declaration could have the greatest impact on the area I have termed *psychomotormetrics.*

Psychomotormetrics

The quote above from the NIE announcement correctly identifies psychometric measurement theory as one which has not changed over many years. These theoretical models of measurement apply primarily to measures of between-individual differences (Lord & Novick 1974). The best known is the classical test theory model in which the individual's score on a test is defined as reflecting a true component and an error component. Regardless of the test user's intent, individuals are expected to differ on this type of test and a person's score is always interpreted relative to the scores of others in the group. These models provide the foundaton of psychometric theory.

Although classical test theory may not be as useful in an educational setting, an indicator of individual differences is often required to measure the dependent variable in an experimental setting. However, the repeated administration of the same measure, typical of many dependent measures used in our field, is a feature of a test that is not appropriately handled in classical test theory. Thus, rather than impose unwarranted restrictions on our data sets, it seems more logical to direct our thinking to developing a new measurement model. I propose as a tentative title the term psychomotormetrics while recognizing that the term has evoked only moderate acceptance by several colleagues and complete rejection by others. My sampling, however, has been limited and informal. Others have suggested the briefer term *motormetrics* which I foresee as problematic in that only the inner circle of devotees of the model would clearly understand the meaning of motor in this context. Psychomotormetrics, then, would be defined as an individual differences model which incorporates assumptions allowing the use of repeated measures.

Physical Edumetrics

The term *edumetrics*, classified by Carver in 1974, focuses on measuring improvement in education. Within individual differences are often considered in the context of growth or change or—in education—improvement. This area is frequently of greater interest to educators than approaches to measuring individual differences. Thus the classical test theory model is inappropriate for this test score interpretation. Regrettably, at least in my opinion, the term edumetrics has not caught on, perhaps because no measurement model was simultaneously proposed by Carver.

The measurement of change in an individual differences framework has already received considerable investigation but these results do not apply in the case of edumetrics. The limited work on change scores in physical education has been conducted using an individual differences model. Perhaps new procedures developed in edumetrics will be generated by measurement specialists outside physical education, and considering the paucity of research published in this area, limited progress can be expected in the 1980s.

Criterion Referenced Measurement

Measurement models used in an educational setting should reflect a testing technology congruent with instructional methodology. Many teachers might be interested in a measurement paradigm which places no constraints on the number of students who might achieve a predetermined standard of performance. While the norm referenced test is designed to discriminate among individuals, the criterion referenced test is designed to measure a behavior domain and is constructed to yield measurements interpretable in terms of specified performance standards.

The general notion of the criterion referenced test will seem familiar to many physical educators. For many years teachers in our field have set standards students are expected to achieve. Thus a cursory review of this approach to measurement might lead one to believe that nothing new has been proposed, especially for physical educators. This, however, is not true. Measurement theoreticians have studied extensively the reliability and validity of these types of measures within a theoretical framework. Whether these test characteristics can be applied to motor performance data can be ascertained only by subjecting data from tests in our field to empirical study. Because of the relevance of this model to the mastery learning instructional approach, much progress will likely be achieved in the 1980s.

Finally in addition to the influence of funding agencies on research in measurement, certain social and political issues will continue to impinge upon the testing enterprise in physical education. The issue of setting performance standards for boys and girls in an educational setting is yet unresolved. Physical educators are being asked to consult with fire fighters, police officers and other public service groups throughout the country regarding unbiased use of physical agility measures. What predictive inferences can legitimately be drawn from a test score for a minority group member? The issue of test bias might best be dealt with at a more centralized level such as within a physical education test service. Certainly the applied test area in physical education will not reach maturity until test services of this sort are available for physical educators. It is unrealistic to expect the development of tests to occur on a sound, systematic basis if we rely upon unpublished masters' theses and doctoral dissertations to generate a test market for physical education teachers.

In conclusion, the measurement of motor performance presents unique problems, both applied and theoretical, requiring the attention of measurement specialists in physical education. Over 50 years of history should be enough to convince us that measurement theoreticians outside our field lack sufficient interest in our measurement problems to make a significant contribution to their resolution. Research on the measurement of cognitive and affective aspects of the so-called basic skills is tied up with an enticing reward system—four- to six-figure royalties from test sales, large government grants and plum positions in large testing services, to name a few. Nonetheless I see a bright future ahead for measurement specialists in physical education. Although a major revolution is unlikely to occur, perhaps the skirmishes will be replaced by a logical, well-organized plan for fostering growth in an area that derives so much of its heritage from so many members of this group.

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GENEALOGY OF SCHOLARSHIP AMONG ACADEMY MEMBERS*

Henry J. Montoye
Richard Washburn

"The scholar's work will be multiplied many fold through the contributions of his students." To what extent does this statement apply to our Academy members? Under whom did our Academy members study? We sought to discover the answers to these questions for several reasons. First, we had an interest in trying to preserve our scholarly heritage. Indeed, the names of mentors of some of our professional leaders have already been lost from our literature. Second, by studying the "familial aggregation" of Academy members, clues to their success might be found. Finally, having a large progeny of Academy members may itself be justification for membership in the American Academy of Physical Education.

Methods

All living active and emeritus members of the Academy (as of 1978) as well as deceased members born since 1890 were included in the study. Letters were sent to all living members asking them to indicate the colleges or universities at which they earned their advanced degrees and to identify the chairperson of their dissertation and thesis committees. After several follow-up letters, all of the 157 members responded. Among deceased members, data on 29 (67%) were obtained from living Academy members, libraries and other sources. This report is restricted to information about the doctoral degrees unless a member had not earned a doctorate. In these few cases, information about a master's degree or a bachelor's degree was substituted.

After the information was compiled, data were sent to Academy members for verification. Information concerning deceased members was also requested from the active and emeritus members. Many generously provided information which in most instances was later verified from library records. Our "family tree" is reasonably complete but there are still some missing branches. The appendix contains a list of names for whom no data are available.

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Results

Typical genealogical charts illustrating the results are shown in Figures 1 through 4. The university or college bestowing the degree is also shown as well as the Academy number. The "family" groupings were arranged in order with the grouping containing the lowest Academy number appearing first. Figure 1 should be read as follows using the first family grouping as an example. C. Hetherington was the advisor of E. Kelley. In the second family grouping, J. B. Nash advised C. Jackson; F. Lloyd, B. Miller, M. O'Donnel, M. Rugen, G. Stafford and M. Vannier. In turn, F. Lloyd was the dissertation advisor for K. Bookwalter, M. Derryberry and L. Larson. K. Bookwalter advised H. Barrow and G. Stafford. Non-members of the Academy who served as dissertation or thesis advisors can be identified by the absence of an Academy number. In one instance, the advisor had been an Academy member but had resigned. As might be expected, many advisors of our oldest members were not members themselves and, in fact, were scholars or faculty members in departments or disciplines other than physical education. Two emeritus members are not shown because their training did not fit the usual pattern of Academy members.

Discussion

Although there may be some Academy members who are not scholars in our profession, the Academy nevertheless represents a distillation of leadership in physical education which is widely recognized. Hence, there is justification for selecting members for study. Of course, all scholars in physical education are not found on the Academy membership rolls. Some are overlooked for one reason or another. Some are not joiners. And there are those who have their primary roots in other disciplines. A careful study of the Academy members who produce large progenies reveals that these members were or are located at universities, usually in non-administrative roles, and they rarely changed university affiliation. This is not surprising since it takes time to establish a laboratory or fountainhead of knowledge. If energy is being dissipated in acclimatization and adjustment there is less available for productive work.

There appears to be one or more antecedents who are not members of our "family Academy tree" but who are responsible for a number of the branches. Perhaps it is not too late in some cases to graft these scholars to their scions on our tree.

Not having a long list of "Academy children" does not necessarily reflect lack of productivity. In some instances, the university or college

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employing a member did not offer advanced degrees in physical education, particularly during the Academy's early history. For example, at one time Columbia University was one of the few schools offering a doctorate in physical education. This is also why the frequency with which a university appears in our tabulations should not be interpreted as an evaluation of the university.

It is also possible an Academy member may have chosen not to work with many students. Tchaikovsky was annoyed to have to teach conservatory students because it prevented him from exercising his creative powers to their fullest. Had he spent more time with students, we may not have inherited *Swan Lake* or his First Piano Concerto. Indeed, his compositions themselves may have been the source of inspiration for many who followed.

The number of one's descendents may be limited for another reason. Students or future students of many of our youngest members are just beginning to take root. These branches of the Academy family tree have yet to appear or be fully developed.

In some careers, the dissertation advisor may not have been the primary influence in a young investigator's professional life. Dr. D. B. Dill, for example, while director of the Harvard Fatigue Laboratory, or later at the U.S. Army Chemical Center at Indiana University, or at his laboratory in Boulder City, Nevada, has had a profound influence on many of us in physical education. Yet he does not appear on the Academy family tree. Dissertation advisors, therefore, represent only one part, albeit often an important part, of the academic arboretum.

Most Academy members are physical educators. However, some are recreation or health educators and one should not expect to find many branches of the tree joined to members trained in another discipline. There are exceptions, of course, such as medicine which has given us some founders of the Academy.

Finally, some Academy members, because of a talent for administration or another educational role, were not in a position to advise doctoral students. In fact, the most important function of an educational administrator may be to provide fertile soil where the seedlings will develop and grow. The late Dr. Thomas Francis, Jr., who was entrusted to evaluate the Sauk polio vacine, illustrates this in a report entitled "A New Year's Fantasy":

> To create the climate in which research will flower requires fertilization and cultivation and even a degree of what might be called pampering. Research is a valuable blossom which thrives well in the University garden,

> but only the hardiest varieties will persist when buried too deep under the compost. It is not in this region a commercial crop. The beauty in the bloom is perhaps best enjoyed by those who really cultivate it, but its value as a conversational piece is often clearly recognized by the salesman and the collector. To certain people it is merely a curiosity, and despite its frailty and scarcity their constant concern is whether it might take over too much of the garden in which other pedagogical plants are firmly established. To be at its best it may need pinching back or careful pruning at times, but it endures with difficulty, sudden shifts in gardening procedure, arbitrary applications of heat which make the sap rise unduly, or unexpected spells when reasonable metabolic activities are obstructed by cold and cloudy atmosphere. A devoted gardener, watchful for blights and trained in the application of intellectual growth promoting compounds, can do much to decide whether the garden will be scattered patches of wilting effort or a magnificent display of prime and prize-winning blossoms. (Francis 1958, p. 1)

It is hoped that the data contained in this report will motivate younger members of the Academy to take seriously the responsibility of training and developing future investigators and scholars in physical education.

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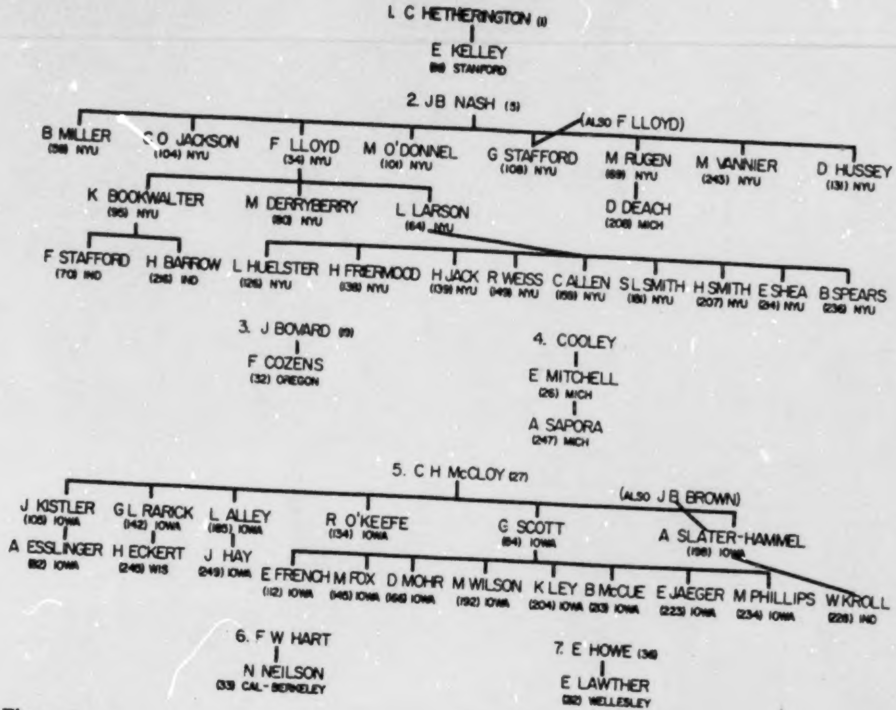
APPENDIX

Deceased Members with Missing Information

Baker, Gertrude	(1894–1977)	Columbia University, Ed.D., 1946
Bailey, Edna	(1883–1973)	
Brightbill, Charles	(1910–1966)	
Champlin, Ellis H.	(1892–1961)	
Forsythe, Charles	(1899–1968)	
Jones, Lloyd M.	(1900–1973)	
Karpovich, Peter V.	(1896–1975)	
Kozman, Hilda	(1893–1977)	University of California-Berkeley, Ph.D.
Landis, Paul E.	(1899–1975)	
Pritzlaff, August H.	(1894–1975)	
Smith, Julian W.	(1901–1975)	
Steinhaus, Arthur H	(1897–1970)	
Streit, William K.	(1901–1971)	
Turner, Clair E.	(1890–1974)	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E KELLEY
STANFORD
2. JB NASH (5)
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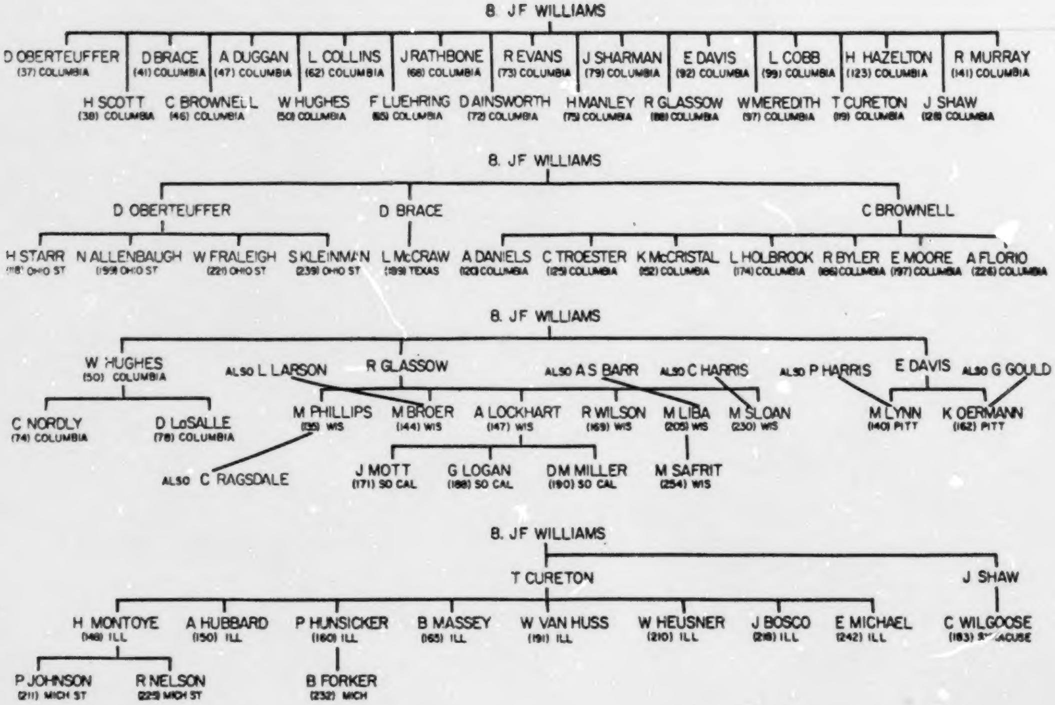
B MILLER (58) NYU
C O JACKSON (104) NYU
F LLOYD (34) NYU
M O'DONNEL (101) NYU
G STAFFORD (108) NYU
M RUGEN (69) NYU
M VANNIER (243) NYU
D HUSSEY (131) NYU
K BOOKWALTER (95) NYU
M DERRYBERRY (80) NYU
L LARSON (64) NYU
D DEACH (208) MICH
F STAFFORD (70) IND
H BARROW (216) IND
L HUELSTER (126) NYU
H FRIERMOOD (138) NYU
H JACK (139) NYU
R WEISS (149) NYU
C ALLEN (159) NYU
S L SMITH (181) NYU
H SMITH (207) NYU
E SHEA (214) NYU
B SPEARS (236) NYU
3. J BOVARD (9)
F COZENS (32) OREGON
4. COOLEY
E MITCHELL (26) MICH
A SAPORA (247) MICH
5. C H McCLOY (27)
(ALSO J B BROWN)
J KISTLER (105) IOWA
G L RARICK (142) IOWA
L ALLEY (185) IOWA
R O'KEEFE (134) IOWA
G SCOTT (84) IOWA
A SLATER-HAMMEL (196) IOWA
A ESSLINGER (82) IOWA
H ECKERT (246) WIS
J HAY (249) IOWA
E FRENCH (112) IOWA
M FOX (145) IOWA
D MOHR (166) IOWA
M WILSON (192) IOWA
K LEY (204) IOWA
B McCUE (213) IOWA
E JAEGER (223) IOWA
M PHILLIPS (234) IOWA
W KROLL (226) IND
6. F W HART
N NEILSON (33) CAL-BERKELEY
7. E HOWE (36)
E LAWTHER (32) WELLESLEY

Figure 1.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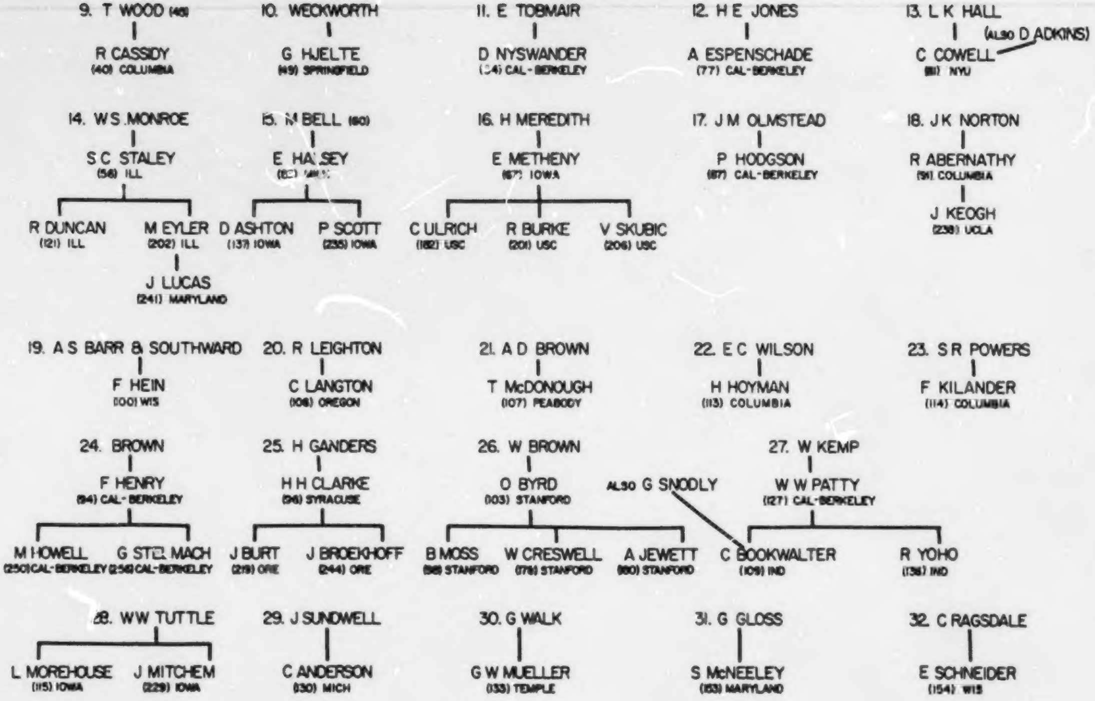
D OBERTEUFFER (37) COLUMBIA
H SCOTT (38) COLUMBIA
D BRACE (41) COLUMBIA
C BROWNELL (46) COLUMBIA
A DUGGAN (47) COLUMBIA
W HUGHES (50) COLUMBIA
L COLLINS (62) COLUMBIA
F LUEHRING (65) COLUMBIA
J RATHBONE (68) COLUMBIA
D AINSWORTH (72) COLUMBIA
R EVANS (73) COLUMBIA
H MANLEY (75) COLUMBIA
J SHARMAN (79) COLUMBIA
R GLASSOW (88) COLUMBIA
E DAVIS (92) COLUMBIA
W MEREDITH (97) COLUMBIA
L COBB (99) COLUMBIA
T CURETON (119) COLUMBIA
H HAZELTON (123) COLUMBIA
J SHAW (128) COLUMBIA
R MURRAY (141) COLUMBIA
8. JF WILLIAMS
D OBERTEUFFER
D BRACE
C BROWNELL
H STARR (118) OHIO ST
N ALLENBAUGH (199) OHIO ST
W FRALEIGH (221) OHIO ST
S KLEINMAN (239) OHIO ST
L McCRAW (183) TEXAS
A DANIELS (120) COLUMBIA
C TROESTER (125) COLUMBIA
K McCRISTAL (152) COLUMBIA
L HOLBROOK (174) COLUMBIA
R BYLER (186) COLUMBIA
E MOORE (197) COLUMBIA
A FLORIO (226) COLUMBIA
8. JF WILLIAMS
W HUGHES (50) COLUMBIA
C NORDLY (74) COLUMBIA
D LaSALLE (78) COLUMBIA
ALSO L LARSON
R GLASSOW
ALSO A S BARR
ALSO C HARRIS
ALSO P HARRIS
E DAVIS
ALSO G GOULD
M PHILLIPS (135) WIS
M BROER (144) WIS
A LOCKHART (147) WIS
R WILSON (169) WIS
M LIBA (205) WIS
M SLOAN (230) WIS
M LYNN (140) PITT
K OERMANN (162) PITT
ALSO C RAGSDALE
J MOTT (171) SO CAL
G LOGAN (188) SO CAL
D M MILLER (190) SO CAL
M SAFRIT (254) WIS
8. JF WILLIAMS
T CURETON
J SHAW
H MONTOYE (148) ILL
A HUBBARD (150) ILL
P HUNSICKER (160) ILL
B MASSEY (165) ILL
W VAN HUSS (191) ILL
W HEUSNER (210) ILL
J BOSCO (218) ILL
E MICHAEL (242) ILL
C WILGOOSE (183) SYRACUSE
P JOHNSON (211) MICH ST
R NELSON (225) MICH ST
B FORKER (232) MICH

Figure 2.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R CASSIDY
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10. WECKWORTH
G HJELTE
(49) SPRINGFIELD
11. E TOBMAIR
D NYSWANDER
([illegible]4) CAL-BERKELEY
12. H E JONES
A ESPENSCHADE
(77) CAL-BERKELEY
13. L K HALL
C COWELL
(81) NYU
(ALSO D ADKINS)
14. W S MONROE
S C STALEY
(56) ILL
R DUNCAN
(121) ILL
M EYLER
(202) ILL
J LUCAS
(241) MARYLAND
15. M BELL (60)
E HALSEY
[illegible]
D ASHTON
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P SCOTT
(235) IOWA
16. H MEREDITH
E METHENY
(67) IOWA
C ULRICH
(182) USC
R BURKE
(201) USC
V SKUBIC
(206) USC
17. J M OLMSTEAD
P HODGSON
(87) CAL-BERKELEY
18. J K NORTON
R ABERNATHY
(91) COLUMBIA
J KEOGH
(238) UCLA
19. A S BARR & SOUTHWARD
F HEIN
(100) WIS
20. R LEIGHTON
C LANGTON
(106) OREGON
21. A D BROWN
T McDONOUGH
(107) PEABODY
22. E C WILSON
H HOYMAN
(113) COLUMBIA
23. S R POWERS
F KILANDER
(114) COLUMBIA
24. BROWN
F HENRY
(94) CAL-BERKELEY
M HOWELL
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G STELMACH
(256) CAL-BERKELEY
25. H GANDERS
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J BURT
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B MOSS
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C BOOKWALTER
(109) IND
R YOHO
(138) IND
28. WW TUTTLE
L MOREHOUSE
(115) IOWA
J MITCHEM
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C ANDERSON
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30. G WALK
G W MUELLER
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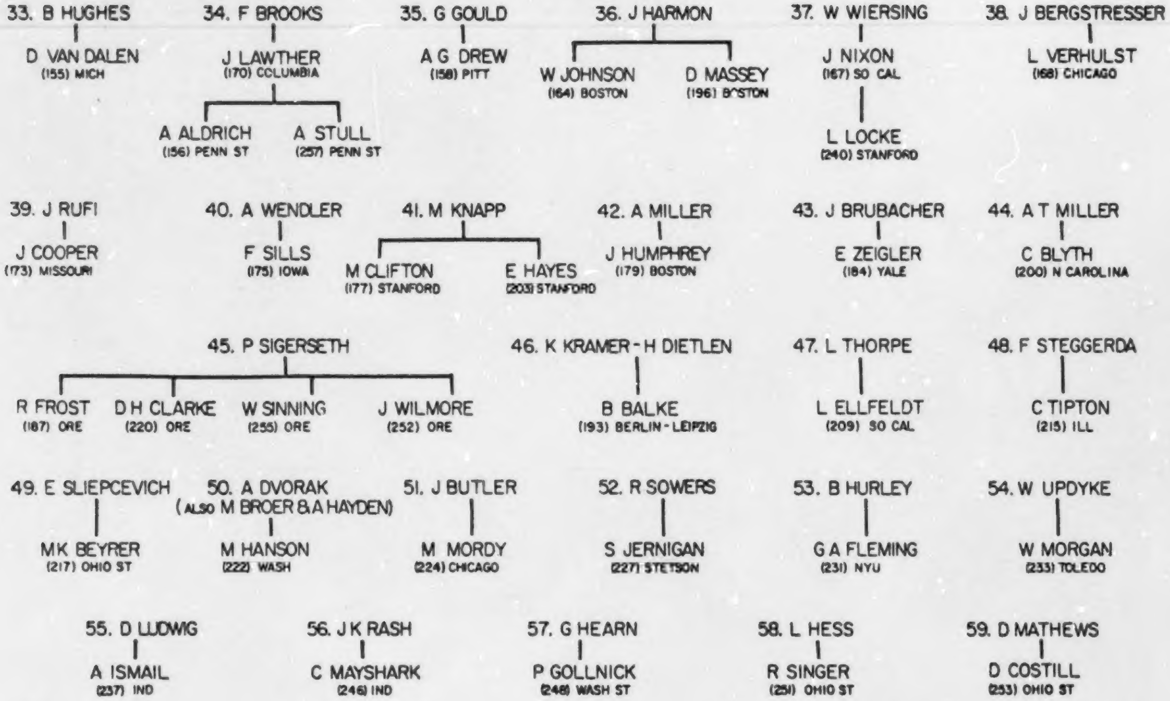
Figure 3.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D VAN DALEN
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J LAWTHER
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A ALDRICH
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A STULL
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35. G GOULD
A G DREW
(158) PITT
36. J HARMON
W JOHNSON
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D MASSEY
(196) BOSTON
37. W WIERSING
J NIXON
(167) SO CAL
L LOCKE
(240) STANFORD
38. J BERGSTRESSER
L VERHULST
(168) CHICAGO
39. J RUFI
J COOPER
(173) MISSOURI
40. A WENDLER
F SILLS
(175) IOWA
41. M KNAPP
M CLIFTON
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E HAYES
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42. A MILLER
J HUMPHREY
(179) BOSTON
43. J BRUBACHER
E ZEIGLER
(184) YALE
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C BLYTH
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R FROST
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D H CLARKE
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W SINNING
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J WILMORE
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46. K KRAMER - H DIETLEN
B BALKE
(193) BERLIN - LEIPZIG
47. L THORPE
L ELLFELDT
(209) SO CAL
48. F STEGGERDA
C TIPTON
(215) ILL
49. E SLIEPCEVICH
M K BEYRER
(217) OHIO ST
50. A DVORAK
(ALSO M BROER & A HAYDEN)
M HANSON
(222) WASH
51. J BUTLER
M MORDY
(224) CHICAGO
52. R SOWERS
S JERNIGAN
(227) STETSON
53. B HURLEY
G A FLEMING
(231) NYU
54. W UPDYKE
W MORGAN
(233) TOLEDO
55. D LUDWIG
A ISMAIL
(237) IND
56. J K RASH
C MAYSHARK
(246) IND
57. G HEARN
P GOLLNICK
(248) WASH ST
58. L HESS
R SINGER
(251) OHIO ST
59. D MATHEWS
D COSTILL
(253) OHIO ST

Figure 4.

CONCEPTS OF PROGRESS

Earle F. Zeigler

As we look ahead to the future of physical education and sport, we need to recognize that our bias arises from the mood of the times in which we live. Our task is, therefore, to analyze the several meanings of the term "progress" and then make individual and professional determinations with the knowledge that our non-statistical types of measurement are subject to errors of observation. To make matters even more difficult, we are not certain about the element to be measured, the motive force, the process of change, the route of change, the goals toward which the elements are moving, and how any goals can be measured. Outside of that, we are in good shape!

Eugene Schwartz, in his insightful work *Overskill*, states:

> The twentieth-century version of progress turns out to be a blindly hurtling technology that has carried man to the moon, split the atom, created a cornucopia of commodities for a privileged few of the earth, and holds out a promise to carry with it the remainder of mankind. Whereas flaws and dangers inherent in progress were becoming more apparent, in the twentieth century the "laws" of progress were becoming ever more elusive .... In the past two hundred years many attempts have been made to complete the edifice of the theory of progress, and on numerous occasions claims have been made that the elusive, universal law of progress had been discovered. But the "law" of progress is still undiscovered. Nor is it likely to be discovered, for in fact progress is a state of mind based upon faith rather than an element of nature. (Schwartz 1971, pp. 31-32)

I don't know about you, but I find it disturbing and discouraging to be told that progress *in fact* "is a state of mind based upon faith rather than an element of nature." It is not that I am opposed to acting on the basis of faith, although I recognize that we would have difficulty in resolving that question itself. For example, I have faith in scientific method, and I have faith that there will be eternal change—at least for the next few million years in our universe. However, I feel that there are several levels of progress that should be understood by us, and it is this question that I will explore briefly at this time.

Definitions of Progress

We use the word "progress" to explain two different concepts—'forward movement' and 'proceeding to a higher stage.' In reference to human progress in evolution, we mean forward movement. Simpson, however, rejected "the over-simple and metaphysical concept of a pervasive perfection principle" (1949, pp. 240-262). We cannot assume that change is progress unless we are prepared to recommend a criterion by which our progress may be judged.

Next we are faced with the question of whether we dare set our own criteria for human progress. Is it acceptable that we be both judge and jury? Yes, because to establish our own criterion is to automatically assume that such is "the only criterion of progress and that it has a general validity in evolution . . ." (Ibid.).

Although many take the notion of humans making progress for granted, the idea of progress is of relatively recent origin, dating to the late seventeenth and early eighteenth centuries. It was Darwin's evolutionary theory that added a scientific base to the concept of human progress. Subsequently, we would need to make a careful analysis of each main period of history to understand whether the dominant social values and norms of a society were moving humans toward a better understanding of the idea of progress. Bury, in his definitive work on this topic, says that not until the late Renaissance did people realize their capacity to structure their own world as skillfully as the citizens of the Classical World had controlled their destiny ([1932] 1955).

Durant, in an early work, ponders the questions of whether progress is a delusion:

> It is unnecessary to refute the pessimist; it is only necessary to enclose his truth, if we can, in ours. When we look at history in the large we see it as a graph of rising and falling states—nations and cultures disappearing as on some gigantic film. But in that irregular movement of countries and that chaos of men, certain great moments stand out as the peaks and essence of human history, certain advances which, once made, were never lost. Step by step man has climbed from the savage to the scientist. . . . ([1928] 1953)

Then he delineates the stages of human growth as follows: invention of speech; discovery of fire; conquest of animals; development of agriculture; introduction of social organization; a (perhaps dubious) rise in morality; development of tools (machines); victory over material elements; growth of education—"the development of the potential capacity for the comprehension, control, and appreciation of the world"; and power of writing and print (pp. 249-257).

Progress in Education

Forty years later Durant still maintained an optimistic view. In *The Lessons of History* (1968), he asserted that "we are unquestionably progressing" and then explained his idea of education as "the transmission of civilization":

> civilization is not inherited; it has to be learned and earned by each generation anew; if the transmission should be interrupted for one century, civilization would die, and we should be savages again. So our finest contemporary achievement is our unprecedented expenditure of wealth and toil in the provision of higher education for all. . . . Consider education not as the painful accumulation of facts and dates and reigns, nor merely the necessary preparation of the individual to earn his keep in the world, but as the transmission of our mental, moral, technical, and aesthetic heritage as fully as possible to as many as possible, for the enlargement of man's understanding, control, embellishment, and enjoyment of life. (p. 101)

Despite Durant's cautious optimism, we are confronted with the fact that by the year 2000 the United States will in all probability have a population of more than 300 million. The threat of greater strain and stress looms large in all of life's many aspects. We will undoubtedly have to devise better uses of leisure. Where does education fit into this picture?

About 60 million people are currently enrolled at some level of our vast educational system and more than $50 billion a year is being spent to finance this gigantic enterprise. The perennial questions remain: what is a good education—that is, what criteria shall we employ; how should the current situation modify educational practice; what type of environment should be provided to guarantee the best educational outcome; and, specifically, what is the school's function?

Durant's ideas stated above must have answered the last question for most people because we really cannot find many who would argue (along with educators like Counts and Dewey) that the schools should serve a more creative function—to provide young people with the knowledge, understanding and attitudes whereby they can more effectively lead the way. Thus, even though there has been advancement, if not progress, the public is unwilling to support education in keeping with economic inflation. Operating funds are made grudgingly; capital funding is difficult to obtain; and there is evident discontent with education. So the struggle continues in our search to determine the ideal hierarchy of educational values in a pluralistic, evolving society. (Now the lethargic critics of fitness through jogging are even decrying the masochistic runners by asserting that they will probably be asphyxiated by automobiles' noxious fumes during the day so they might as well watch their orchids grow as run after that first heart attack!)

Need for Consensus

If we hope to influence progress in our society and profession, we need greater consensus about professional goals—goals that are consonant with our society's values. To achieve this, we must speak out forthrightly regarding the many recurring problems our profession faces between now and 1990. We should aid high-level scholarly work and sponsor meetings where we and younger colleagues can draw the all-important ordered generalizations that will strengthen the theoretical underpinning of sport and developmental physical activity.

This means establishing criteria for measuring our goals (obviously a precarious enterprise). Then we must state what elements of our work should show progress; which causal factors will produce the desired result; what the route of change may be; how the elements of progress might change with time; and toward which objectives and long-range goals the elements we typically promote are moving—all in all, a prodigious task.

It is urgent that we agree soon on the following professional concerns:

- what a desired level of physical vigor and fitness is
- whether we believe that regular physical education and sport should be required and to what level of education
- which attitudes toward health and ecological problems are needed for survival
- what developmental physical activity is desirable in relation to other leisure activities
- who is responsible for therapeutic exercise for remediable physical defects
- what type of competitive sport experience is desirable for both sexes
- to what extent sport and developmental physical activity can contribute to character and personality development

A tidal wave of change is threatening to engulf the field of physical education. Much of our tradition, our cherished orthodoxy, and ancient assumptions and myths will be challenged in the years immediately ahead. How we confront this opportunity for progress—the alternatives that are open to us—is explained in the anecdote that described how Destiny came to an island many centuries ago and confronted a cynic, a mystic and a physic(al educator). Destiny asked, "What would you do if I told you that in 30 days this island will be submerged because of the after-effects of a shifting of polar ice? The cynic said, "I would eat, drink and make love for the whole month." The mystic said, "I will go to our sacred grove with my loved ones, make sacrifices to the gods, and then pray without ceasing for the entire 30 days." The physic(al educator) said, "Why I might eat, drink, make love and pray, but my immediate plan would be to assemble the wisest scholars, researchers and practitioners, along with aquatics specialists and experts in wilderness survival techniques and work like mad to figure out how to live underwater!" Of course, I do not suggest that you take this story literally, but I do believe that we will be inundated in the 1980s by people from other trades, professions and disciplines seeking increasingly to "get into the act" of sport and developmental physical activity. I want us to be recognized as professionals who lead the way in research, analysis, teaching, coaching, and promotion of human motor performance in sport, dance, exercise, and play. Is this too much to ask?

If we wish to continue our progress, we must redouble efforts to provide our profession with a sound body-of-knowledge and sharpen our "conceptual lenses" as to our exact purpose. We will need to improve undergraduate and graduate professional preparation and strengthen our educational base and instructional techniques. We will have to borrow marketing techniques with a psychological orientation and increase the public's awareness of their need for our product. We should provide opportunities for sport and physical activity on an easy entry basis, encourage continuation of vigorous activity regularly and arrange for reinforcement reminders that carry a positive message with humor (Kisby 1979).

Finally, in the words of Durant,

> The heritage that we can now more fully transmit is richer than ever before. It is richer than that of Pericles, for it includes all the Greek flowering that followed him; richer than Leonardo's, for it includes him and the Italian Renaissance; richer than Voltaire's, for it embraces all the French Enlightenment and its ecumenical dissemination. If progress is real despite our whining, it is not because we are born any healthier, better, or wiser than infants were in the past, but because we are born to a richer heritage, born on a higher level of that pedestal which the accumulation of knowledge and art raises as the ground and support of our being. The heritage rises, and man rises in proportion as he receives it. (1968, pp. 101-102)

Obviously, our duty and responsibility in physical education and sport is to improve upon the heritage that developmental physical activity can provide for all people everywhere; to transmit this knowledge and accompanying attitudes to as many people as possible; and to work unremittingly toward the professional preparation of leadership that will allow our field to achieve its unique potential. This represents a concept of progress that is very difficult to refute.

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CONTEMPORARY PROBLEMS OF SPORTS PSYCHOLOGY IN USSR

Nikolai A. Khoudadov*

In the Soviet Union, research in sports psychology is conducted at state scientific-research institutes, 21 institutes of physical culture, the Institute of General and Pedagogic Psychology of the Academy of Science, and at a number of physical education faculties (schools) in about 100 pedagogic institutes.

Organization and guidance in sport psychology is the responsibility of the USSR Sport Psychology Commission and All-Union Research Institute of Physical Culture, a principal scientific body in the country.

Most Soviet sports psychologists believe that sports psychology, as a branch of general psychology dealing with specific studies on human activities, is based on fundamental principles of human performance, such as have been revealed in the works of L. Vygodsky, S. Rubinstein, A. Leontiev and other noted scientists. The essence of the concept of human activity is derived from the unity of categories: a subject, an object and process of activity itself, as well as from understanding that in this unity the psychological phenomenon appears and develops.

In the psychological structure of human activity, one can distinguish such components as objectives, motivations, conditions, acts and operations. As S. Rubinstein stated, "a study of psychological aspects of activity is nothing else but a study of the psychology of a person engaged in sports activities." Based on these principles, psychological studies are carried out in different fields of physical culture and sport which we can consider as one of the varieties of human activity.

It is worthwhile to dwell upon three main divisions in sport psychology which in our opinion are of great significance to the theory and practice of physical culture and sport:

- psychology of top-level sport
- psychology of sport for gifted adolescents and youth (so-called "reserve" for top-level sport)
- psychology of mass sport and physical culture (for people of all ages)

Studies in these divisions reflect different approaches used in other branches of psychological science, namely, social psychology, engineering

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psychology, educational psychology, etc. Research problems within each division are mainly determined by psychological differences of the activities named and the character of psychological traits.

Psychology of Top-Level Sport

The main features of top-level sport are: constant pressure to achieve perfection of sports skills; high demand to break records and to win in competitions; great intensity and enormous amount of training workloads; extreme conditions in competition; model training reflecting actual competitive situations; and strict compliance with daily routine requirements. These features point out how important is the study of psychological reliability, psychological preparedness and neuropsychical rehabilitation as well as formation of an athlete's psychological preparation methods.

Nowadays sets of personal, psychosocial and psychophysiological parameters have been developed to improve psychological reliability. Reliability is the ability to keep a high level of efficiency and stability of psychological activity and capacity to work despite extreme competitive conditions. Efforts have been made also to determine the peculiarities of individual style of activities in different sports to help athletes achieve steady success in competition.

In studies on psychological preparedness, special methods are used to ascertain the dynamics of quantitative parameters of physical functions regulating an athlete's activity prior to and during competition. These studies reveal the optimal limits of the parameters, different characteristics of the nervous system and the athlete's complete personality.

Studies revealing a correlation between the level of emotional arousal of a top-level athlete and the efficiency of his or her competitive performance (of course, depending on the sport and other individual factors) have great practical interest. It was noted that the most important outcome would be the possibility of conscious regulation of this level just prior to and during actual competitive performance.

Research on neuropsychological recovery provides valuable observations about certain changes in psychological parameters after physical and psychological workouts in different conditions of recovery and rest (rhythm stimulation, music, psycho-muscle exercises).

Practical work in the field of psychological preparation of athletes can be regarded as part of applied psychology in the above-mentioned themes. In the USSR, it also takes into account that psychological preparation implies a system of actions directed to raise the level of psychological reliability, preparedness and optimization of athlete recovery after competition.

Scientific and applied research has been conducted at the Moscow and Leningrad Scientific and Physical Culture Institutes and the institutes in Kiev, Volgograd, Belorussia and Erevan. As a result, social, psychopedagogic and psychohygienic methods of regulating athletes' condition have been approved, as well as methods to raise competitive motivation and to improve the psychological relationship between athletes and coaches personally, and with the overall teamwork.

At present we have come to a principal methodologic approach dealing with optimization of management in various aspects of top-athlete preparation. By this we mean: creation of a top-athlete psychological model in every particular sport (compensatory process included); a system of psychological checkup at different stages of preparation; comparison of the data received from checkup to a created model; and selection of necessary individual ways to prepare athletes as close as possible to the model for competition.

Recently in Moscow a new scientific line has received great attention based on a multidisciplinary approach—"psychobiomechanics, which studies the interrelation between motor sets, ideomotorics, emotional arousal, muscle coordination, muscle tensions and effectiveness of different movements." We think this approach has a great future in teaching physical skills.

Studies concerning psychological activity in the extreme zone of human capacity have great value in the search for ways to optimize the teaching and special preparation of people in different areas of professional work. Such studies, combined with those in pedagogy, sociology, medicine and biology, have created a new scientific discipline—antromaximology, which intially came from the top-level sport model approach (V. V. Kouznetsov).

Psychology of Sport "Reserve"

Sports activities in this division are characterized by: prospective objectives; a recommended course for achieving high results according to age group and sport; acquisition and perfection of motor skills; precise calculation of workload; and a gradual way of preparation.

In connection with psychological research in sports "reserve," we may single out three basic problems. First is the psychological aspects of selecting gifted athletes. This problem is under investigation in the Moscow, Leningrad, Volgograd and Kiev Institutes of Physical Culture. In order to define young athletes' abilities in a certain sport (1st level) and to forecast their progress and performance in competition (2nd level), the young athletes are asked to go through a specific set of individual and psychophysiological tests.

Second is the problem of the sociopsychological aspects of an individual and that of a group of young athletes. This study includes investigations of social motivation and changes of interest of young athletes selected in sport schools. At Moscow, Litva and Omsk Institutes specific traits of psychological structure in groups of young athletes with varied maturity levels are under study. At Jame Institute and Erevan, the interrelation between coaches and trainees and team influence on young players' movitations are being researched.

The third problem in teaching and training young athletes of various age groups concerns general and special psychological variables and the effect of training and workloads on these parameters in athletes with different nervous systems. These problems are being studied at Moscow, Belorussia and Tashkent.

Several institutes have designed special programs to improve perceptual-motor and cognitive learning in games and duel sports like wrestling, boxing and judo.

Psychology of Mass Sport

Participation in mass sport is quite different from the other two divisions in that its objectives are to improve health, develop motor skills and provide recreation. There is no compulsory aspiration or pressure to win. Participants neither plan nor calculate their work load. Instead of adhering to a strict daily routine, they go to practice and competition whenever they feel like it.

Research in this area focuses on general psychology, including social psychology, and sociology as a combined endeavor. One of the most important and practical studies in this area is the analysis of people's motivation to participate in sport and interpreted with respect to their age, sex, profession, nationality and geographic location. The collected data allow further planning and organization of mass sport in regard to construction and distribution of sport facilities, provision of teaching staff, selection and orientation of beginners, etc.

Research on psychological functions has enabled investigators to study group structures that are different in composition and athletic standards in order to reveal the proportion of comfort and conflict, emotional behavior, level of management and leadership, and consequently to devise a methodology of educational work for these groups.

Using differential psychology methods, University of Kazan psychologists are currently studying the effect of physical culture and sport on human psychological development. At the University of Tartu the effect of physical culture on the last stages of youth ontogenesis is being studied. At Kiev and Kirgiz Institutes of Physical Culture the effect of various sport activities on the development of basic psychological functions is being evaluated. In Georgia the dynamics of an athlete's personal traits is being analyzed according to the Urnadze Theory.

Important investigations in the so-called "health groups" have been carried out to determine the influence of physical activities on psychological functions and the emotional state of middle age and old people in order to select correct training programs.

Soviet psychologists are also studying psychological aspects of physical education and sport in schools. They analyze the correlation between physical education and mental abilities of students and their capacity to work (Institute of Age Psychology and School Hygiene, Moscow Pedagogic Institute), the place of physical education in leisure time (Institute of General and Pedagogical Psychology, Leningrad Pedagogical Institute), and the psychological basis for the means and methods in school physical education programs as a part of all-round education (Riazan and Tambov Pedagogical Institute, Uzbek Institute of Physical Culture).

Among psychological investigations in university physical education and sport, we may single out those works which deal primarily with gnostic interests of physical education majors (State Central Institute of Physical Culture); the social structure of sport groups (Leningrad Institute of Physical Culture); and the effect of different types of academic work on student-athletes' psychological state in physical culture institutes (Uzbek Institute of Physical Culture).

It should be mentioned that a practical approach to these problems does not lessen the importance of theoretical research. In addition to the above-mentioned scientific approaches (antromaximology, psychobiomechanics and others), several leading institutes work on themes like the structure of top-athletes' personalities, their social and biological behavior, and methodological grounds for studying sport activity.

Psychological studies are becoming increasingly complex, and it is common to use medical, biological, biochemical, biomechanical and pedagogic methods, as well as to carry out experiments in natural training conditions that simulate actual competitive situations. We believe that only under these conditions and through combined efforts of specialists in adjoining fields such as doctors, teachers and physiologists that the theoretical and practical problems of sports psychology will be solved.

R. Tait McKenzie Memorial Lecture:
CHANGING GODS, CHANGING SPORTS
Michael Novak

I would like to talk about sport in a way that is not directly talking about physical education. I would like to look at sport not so much as an exercise but as a liturgy, a set of rituals, a symbolic behavior, a way of acting out an image of what it is to be a human being . . . how one understands one's relationship to one's own body, to the nature in which we move and have our being, to one another, and to whatever power, whatever life there is in the universe.

Imagine that you are a foreign visitor to the United States, flying over the country, perhaps as recent visitors from China did, never having seen the continent before. Or perhaps, like visitors from outer space on a flying saucer spotted by a state trooper along a dark country road. One of the most extraordinary sights you would discover would be our distinctive buildings on every university campus. They are almost always circular or oval, clearly built in honor of some goddess, purely feminine in their symbolism. As you drew closer, you would try to figure out what went on in these buildings, whose names were stadia or colisea, so you could begin to learn some of the inner secrets of that culture.

You might also discover that two or three days prior to the event that would take place in any of these stadia, the event would be written in detail in a section of the newspaper that was larger than any other section, larger than the international, national or city news sections, larger than the arts or financial news—in the sport pages, the very heart of the paper. For several days before and following the event, you would probably discover that perhaps 70 percent of all conversations across the nation would begin with some reference to this sport event. You would discover that in many of these stadia, events occur on Friday, Saturday and/or Sunday, especially during autumn. You might conclude that in this country there are three religions—Friday religion, Saturday religion and Sunday religion. You would be right although your reasoning would be wrong. Also, you would discover that a very large part of the country's population was linked to these events simultaneously in small

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This excerpt of the R. Tait McKenzie Memorial Lecture was delivered at the annual convention of the American Alliance for Health, Physical Education, Recreation and Dance, New Orleans, 1979.

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family shrines maintained in almost every home by means of vivid images and visions.

You would see events performed under tremendous discipline and an extraordinary sense of perfection before connoisseurs who would loudly voice their displeasure at any imperfect or incomplete field action. At these family shrines, you would discover great reverence so that if anyone dared to hospitably offer potato chips or cheese, they were shushed, angrily rebuked, perhaps even asked to leave the room.

As can be seen, you would recognize immediately America's fascination with sport. This fascination, however, touches not only America. In fact, in the Soviet Union and Western Europe there are more hours of televised sport than in the United States. You would discover that in America, sport functions not only as a form of exercise and physical development, but as a bearer of enormous psychic satisfactions. Thus, you would have to consider the reality of sport as an anthropologist, regarding sport more as a religion than as entertainment.

During the sacred time of events on the field, the audience is attentive. During halftime entertainment they get up to buy popcorn and go to the bathroom. On Monday nights in any bar or hotel across America, the attitude of those who regard the visions on those little altars high above the bar is reverential far beyond what it is on any other week night. On all other nights, it is mere entertainment; on Monday nights, it is serious. Something much more significant to sport fans' elation or despair and to their sense of themselves is going on in their conduct of sport and in their own sense of success or failure.

To understand the power of sport in America, we must realize that more people play more different sports than ever before. So many people engage in forms of exercise that equipment managers can barely keep pace with the demand.

There are clear differences between those who see the point of sport and those who don't. Some people looking at football games see only gibberish; only some are excited--and those who are excited have only one recourse for those who aren't—pray for them and fast, and hope that one day faith will be given to them. There is almost no way of communicating across that divide. To understand that power, we must go back to an earlier time in our country, to the first half of the nineteenth century.

In the 1830s, de Tocqueville wrote "there is one odd thing about Americans, they play no games here, there are no sports. They work." Even as he wrote, the first of America's trinity of games was being invented in upstate New York or somewhere, the mythology is somewhat shrouded. There was a precedent elsewhere, but the game—baseball—was distinctively an American original. About 40 years later, another game, football, was created in America, again with a precedent elsewhere, but distinctly American in style. And some 20 years after that, almost overnight, the third of our holy trinity, basketball, was invented.

So, early on, the particular American love for sport had taken root. Try putting yourself in the position of the first Americans at the time of the Revolution. Imagine the one who was first to cross a mountain, or the first to set eyes upon a valley, or to push a boat out on a glistening lake. The early literature was about these men, athletes of the wilderness who traveled through rivers and forests, into nature and learned the arts of the human body, learned the strengths and grace of human muscle and human movement, learned to move noiselessly, efficiently, naturally. They learned from nature's secrets and from the competitions unto death in which nature is involved.

The first sports were about survival; no medal for living or dying. Our first athletic heroes were mythical and real figures like Daniel Boone, who killed a bear when the bear might well have killed him, and Davy Crockett, and Chingachgook the deer hunter, and Captain Ahab. In these first athletes there was exemplified a new set of attitudes, specifically American, toward self and nature, that I call the "American Zen."

American Zen

In American Zen there is admiration of an aspiration for transcendence achieved through a perfect act. This idea is anciently rooted. The notion is that most of us most of the time are mediocre. We get through the day and week doing a halfway decent job. Occasionally in every one of our lives, perhaps slightly more frequently and beautifully in the lives of great ones, we are on, we are hot. In these occasional acts we achieve such perfect harmony that we remember them forever. We transcend our humdrum selves. And so Chingachgook shoots an arrow precisely through the center of a distant leaf, having singled it out among all other leaves. Or we throw a lasso perfectly, kick a field goal exactly, or whatever. There is a sense in this American Zen of respect for the peculiar kind of transcendence that comes from executing a physical, mental or emotional act flawlessly.

Concomitant with this profound sense of perfection is a feeling of union with nature, as though at least for a moment we are not fighting gravity or our own body and sluggish will. It is as if for a fleeting instant we are being what nature intended us to be. During these moments it is as if we were not human beings amidst nature, but as if we were nature itself, rising and falling in consonant with its energies and rhythms.

In this American Zen there is not only a feeling of harmony with nature but, conversely, a distinct note of competition with nature. Nature is not always kind. Granted, this idea is counter to contemporary thinking. Through environmental ideology we have learned that nature is beneficent and it is only human beings who pollute. Nonsense! The original and still valid perception in America was that nature is cruel and kills at random. Nature destroys itself, wind blows away topsoil, ice destroys trees, deer cannot find food to eat and perish in snow, and human beings count as almost nothing. The average age of mortality for humans, even as short a time ago as two centuries, was in the 30s. There was a profound sense that humans were locked in a struggle for survival against nature.

Side by side with the American Zen belief that we are locked in competition with nature, is the hope and certainty that we humans would survive and triumph over nature, that the outcome of this competition is resurrection. Though individuals would die and experiments would fail, some experiments—like our nation's with liberty—would work even when most of the world said otherwise. A key point to be learned by the transcendence in perfect acts, the union with nature and the struggle against nature is that humankind could win.

Therefore, what was at stake in the celebration and the combat was the living out of the liturgy of winning and losing in which human survival was symbolically at stake. If Chingachgook missed the leaf he was shooting at, did he miss only the leaf? No, if he missed, it was an ill omen. If he missed, human wit, human training and human perception were not all they might be. People might tell you after a game, "You shouldn't feel so bad, it's only a game." But it doesn't feel like it's only a game. Perhaps you *can* learn to lose, but the point is, you must *learn* it because what is at stake for you symbolically is more than just a game.

I believe every athletic activity and form of physical learning acknowledges the importance of survival. Human gestures and movements are never simply physical—they are always symbolic. They say something about our soul, our attitudes and the inner images we have. They say something about our relationship to our bodies, to others and to the earth.

Let us examine the structure of the myths of the American trinity of sports mentioned earlier. By myth, I mean the acting out of a story which gives an image of the self and the world and their relationship to each other. The myths of baseball, football and basketball are three different ways of understanding human life and the American experience. Although scores of sports have competed for public affection in America, only these three, I believe, have captured the imagination of sufficient numbers to be truly national. They say something about America's understanding of its own experience.

Baseball

Baseball, one notices immediately, is played upon a huge, flat grass field. This green sport is close to American's rural, Protestant experience. From its beginnings, it was an instrument by which people untutored in the Protestant vision became Americanized. Through it they learned something about what it meant to be American before they could speak English, understand the Constitution or perhaps even read the *Federalist Papers*. Here was invented a game which dramatized the check and balance system portrayed in the *Federalist Papers*.

Let me explain. In baseball, every adjustment affects the rest of the game. For example, if you make the ball one ounce heavier, you significantly alter the hitter's statistics. If you move the base paths—first base 90 feet, a multiple of three, in by a yard or out by a yard—you change perhaps 8 to 10 percent of the number of hits or outs. If you raise the pitcher's mound, which from the dugout looks like a very high hill, by another inch or two, you give the pitcher a substantial advantage.

If you remember when President Nixon was being threatened to resign, some said his resignation would mean the destruction of the country's spirit and complete confusion would reign. Those critics and columnists did not understand baseball—when you change a manager mid-season, nothing special happens. And the American people changed the President mid-term as easily as baseball changes managers.

In an extraordinary way baseball is an individual game. The little ball goes from person to person, singling out one actor at a time. Each person who goes to the plate to hit, goes alone. Only cultures with a high degree of emphasis upon the solitary individual, indeed upon a certain machismo and sense of honor, value baseball, as do the Hispanic cultures and the Japanese.

Baseball is a game mystical in its numbers, always, it seems, threes or fours. Three strikes, nine innings, 360 degrees around the bases, like Yankee clippers traveling around the world, and coming home.

It is a game requiring great reverence for law and respect for the umpire. One can argue and insult and draw lines in the dust, but one always knows that it is the umpire who has the ultimate power to eject.

We are supposed to be an activist people, quick, energetic doers of the world, yet how could one of our national games be so slow that for as long as eight consecutive minutes the greatest physical act of a right fielder might be to hit the fist into the glove or perhaps make a slight movement of the jaw. A hostile critic might even say baseball is boring. But even here baseball reveals something special about the American character. We are not what we say we are, there is a meditative, quiet niche in the American soul, reflected in that expanse of grass and slowness of the game, reflected in a love for solitude, hiking in the woods, and many other activities which, over the generations, Americans have loved. We are not exactly what our writers say we are. Some of our sports reveal something quite different.

Football

By contrast, football is a corporate game where everyone moves as one and by central planning. Now that there are computers for every play, everyone moves by bureaucracy. In a football game there might be 140 plays averaging 4 seconds each. If you calculate the number of plays by the number of seconds of each play, the actual activity is only about 11 or 12 minutes. The rest of the players' time is spent huddling and patting one another's fannies. Yet everybody is exhausted by the end of the game because it demands such intensity and perfection. In those split seconds, each person must act perfectly, exactly the way it has been diagrammed on the blackboard, and even more inpressively, respond perfectly to unforeseen variations. It is a game with an extraordinarily high emphasis on the perfect act.

During practice, a quarterback might complete a certain pass to a receiver 77 times out of 100. That doesn't count for a thing, only what he does in the sacred 60-minute game period during which he might have a chance to throw that pass pattern twice. Those are the only moments that have existence.

It isn't that winning is everything—it's just that losing is like dying. It doesn't count that the other team is better on paper because with enough intelligence, wit and effort, a team can defeat the better team on any given day. Losing hurts because players know it results from a fault of their own.

Football mirrors American life as baseball mirrored the rural, Protestant beginnings of the country. Football arose during the great Immigration and mirrored the image of life of many immigrants, many of them poor. Football is a corporate game where players know the goal, in which the individualism of early days has already decayed and among the huge industries and corporations, hardly anybody works for him/herself any longer. Today, only about 13 or 14 percent of all Americans work for themselves.

In football, between us and the goal there stands 11 players trying to prevent us from getting there. It's as though we spend all our days in the office, and between us and where we want to go there are 11 committees. You spend Monday through Friday, two or three yards in a cloud of dust, attending committee meeting after committee meeting, faking right, faking left. Every once in a while, when nobody is expecting it, you manage to fade back, find a receiver all by himself, and before the administration knows anything about it, you complete a long bomb. It is so utterly satisfying to score before anybody knows you even ran the play. It is a marvelous metaphor of the drudgery and sudden excitement that comes from corporate living.

Football, said Vince Lombardi, is a game whose fundamental metaphor is running for daylight; there are so many obstacles. You can't win the game by piling up yardage; it is not a possessive or capitalist game. You win only by breaking through, running for daylight, being liberated. But the game of profound images is an important part of life. As America has become more liberal, more sweet and reasonable, more peaceful and unferocious, men wear longer hair and the West is tame.

Football reveals the irrationality and sheer physicality of life, and at least in the metaphor of controlled brutality, it is brutal. Nothing is more impressive at Harvard than to see a tight end upside down with nine sets of arms and legs. But so much for university rationality.

Many of us have grown up isolated from hunger, conflict and violence. Yet in this century alone, 30 to 50 million persons have died in Europe at one another's hands in a course of bloodshed that continues still. So even at this moment, tanks are firing at human beings and planes are being downed. It is a century of unfathomable bloodshed. In a certain way, sheer use of the body and physical force and the conflict and combat that mark football serve to remind us of it. After spending all day or week at the office, being as polite and democratic as possible, it is marvellously satisfying, even in playing touch football, to lay somebody out with a perfect block. It is wonderful to let our body say what we feel from time to time.

Basketball

Basketball was invented in 1891 by a Canadian clergyman, Dr. James Naismith, when he was a student-instructor at the International YMCA Training School in Springfield, Massachusetts. When he realized that his students stopped engaging in physical activity once the first snow came, he tried to figure a way to keep their bodies fit. They had had enough at football and there was nothing until baseball season except exercises which they disliked.

Practically overnight Dr. Naismith invented the game of basketball. As he was a Protestant minister, his first thought was that the game be goal oriented. As he was Anglo-Saxon, he decided the game would involve cooperation, so there would be teams, individuals but teamwork, the great Anglo-Saxon ideal. It was to be a non-violent, goal-oriented game played by intellect and calculation, like chess. Thus the average score for 20 or 30 years was 16-12, 14-10, like a Big Ten football game. Then gradually the immigrants began to play. Hank Lazetti learned, as some immigrants had to learn, to cheat a little. He developed the one-hand push shot so he could get off on one foot. One night in Madison Square Garden he scored 55 points and changed the game. George Mike, another immigrant, tired perhaps of being called a "dumb Swede," learned to stand there in his full height and not only stand but pivot, and not only pivot but hook, and changed the whole meaning of the inside game. And Bob Cousy of French Canadian heritage discovered basketball's most important secret. Although not its founder's intention, in reality basketball became a game whose inner meaning was deception. To play it well, the player learned never to allow other players to know what he was doing; and whatever he seemed to be doing, he should be doing the opposite. It evolved into a game of feint, foolery and deception. And the tempo of the game became increasingly faster and faster.

Summary

Each sport has its dedicated players and worshippers. In many respects, American attitudes and mores reflect the inherent rules and behavior of these sports. Or is it vice versa? Sometimes one is in ascendence, sometimes another, but the public is engrossed and transcended above the mundane tasks of everyday life. Our sports are our life, our athletes are venerated for their performance, and the American citizen is transported into the world of skilled performance.

APPENDIX

NEW MEMBERS OF THE ACADEMY
1979

Active Fellows:

- Kenneth S. Clarke
- Dorothy V. Harris
- Francis J. Nagle
- Roberta J. Park
- E. Dean Ryan
- George H. Sage
- Daryl Siedentop
- Harold J. VanderZwaag

Associate Fellows:

- Daniel F. Hanley
- David Robertshaw
- Clayton L. Thomas

Corresponding Fellow:

- Horst Ueberhorst

RECIPIENT OF THE HETHERINGTON AWARD

Marion R. Broer

RESPONSE TO HETHERINGTON AWARD

Marion R. Broer

I am still overwhelmed by the realization that this is really happening to me. I shall be brief but I do want to thank you and to add a few thoughts.

In a way it is very hard to comprehend the years that have slipped by since I last faced a class at the University of Washington. These years have been so filled with varied activities and responsibilities, many of them new and very different from my profession, that I still wonder how I had time to work, that is for a salary. Through the years, as I attempted to share with my students my understanding of various topics, I was constantly learning from *them*. Now I find that I am learning from my fellow retired residents of Rancho Bernardo. I would like to share a few of my observations of physical activity and understandings of retired persons ranging in age from the 50s up, and I do mean up. Many active people are well into their 80s.

What do retired persons do physically and what do they understand about physical activity? A great number are able to swim regularly, many very well. Quite a number play tennis and a high proportion play golf and enjoy lawn bowling. Many have learned these activities since coming to our community. Many of the residents walk daily and a few still jog. Following the Super Bowl game broadcast, people seemed to literally pour out of the woodwork, the game having upset their normal walking schedule; everyone, including us, hit the sidewalk at the same time. Indeed ours is a very activity-minded community.

Personal observations and discussions bear out, however, that there is little understanding of the human body beyond the fact that the body needs activity and there is no understanding at all of effective body mechanics. I have become increasingly aware of the fatigue, frustration and even pain that might have been avoided and the enrichment of life that could have resulted if basic understandings had been acquired in earlier years. The interest of seniors in such information, when offered, is great. It appears that, with the interest in physical activity at this time, physical education has a great opportunity, a J. B. Nash "teachable moment."

Noting problems dealing with movement of some of the more elderly residents or with the elderly helping a handicapped spouse or friend, I offered a six-week class to discuss some of these problems. The interest was rewarding. It is a great experience to teach a group so obviously aware

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of their need for the information and skills being presented and so grateful for the help that this gives them. For example, a simple suggestion—when lying on the side in bed, to put pillows under the top leg so that it will be level with the hip and thus relieve strain—earns deep gratitude from the individual who now sleeps without pain.

In response to hearing so many discuss lower back pain, I offered another class advertised, *not* as an exercise class—these are taught through public school districts—but rather as a class to learn about exercises, the values of specific exercises, important considerations in their performance, etc. This led to a popular class in which was discussed ways of moving to avoid back strain.

Most of those with whom I have worked in the past few years lack the most elementary knowledge of possible ways to avoid back strain while doing the everyday tasks required in normal living. The most consistent comment from those in the class concerned their appreciation for the fact that basic principles which need to be considered before starting a movement task and the mechanical advantages and disadvantages of various methods of performance were explained. They were both surprised and pleased that, as they put it, they were always given reasons for suggestions, apparently a new experience in teaching for them.

We are in the habit of thinking that biomechanics and health are separate areas, yet many people who are incapacitated by back problems could be relieved of their problem by efficient body mechanics. Could prevention of health impairment offer an avenue of employment for some of the excess biomechanists whom Jim Hay spoke about? As health care costs skyrocket, prevention assumes increasing importance.

Opportunities to discuss the forces involved in pushing and pulling arise constantly on the golf course as women (and I say women because I play more frequently with them, although I don't remember seeing many men do this) *push* their golf carts regardless of terrain, even uphill. When I point out the forces involved and advantages of an upward force, particularly when going uphill, I find great interest and even a change in behavior. It is not surprising that the older generation has no understanding of biomechanics, for only relatively recently have we in physical education really paid attention to such information. Indeed we have been very slow to make these understandings meaningful to other than major students. But my point is that people are eager for information and are willing to use new understanding to modify behavior.

If physical education is to fulfill its responsibilty to society and to make an impact, it must concentrate on instruction aimed toward developing understandings that will make possible intelligent solutions to movement problems that arise throughout life, not just movement problems of sports, dance and exercise. We must provide experiences that can lead to understandings of the human body, its response to activity or lack of activity, physiological and physical laws that must be considered if this marvelous tool for movement is to be used effectively and without injury, and methods for solving any motor task that might arise. These opportunities for learning must be offered to all; we cannot concentrate only on high school and college youth. Of course, such instruction must be adapted to each age group. Parents would be able to help their children develop skillful motion and fitness if they had had repeated opportunities to learn physiological and motor development and biomechanics during their own school years. Can we develop physical education opportunities to make this possible? Opportunities for such understandings can no longer be reserved only for physical education majors.

What about our research? Are we translating our sophisticated findings into practical information that can be passed along to all students, information important to maintaining and moving the body effectively? We *must*. For all people, physical education experiences must be vital for living, total living throughout the life span, not just for the hours on the playing fields during youth.

I am well aware that I do not stand here alone. All those who have stimulated and encouraged me, and in innumerable ways have helped me, stand here with me. If I have accomplished anything worthy of this recognition, I am indebted to many. I was fortunate to have come in contact with a previous Hetherington Awardee, Ruth Glassow. When I was very young, she gave me a glimpse of what was missing in my own schooling, which offered little in experiences leading to the understandings I have been talking about. The profession at that time was too involved with games and sport skills for which there was a "good form" which everyone struggled to duplicate. She opened the first window to what might be and stimulated me to continue to study. Later, I was fortunate to work further with her and with other colleagues, with some of you, with some who are not with us. Thus I was able to gain an understanding of my own body, my need for activity and for mechanically efficient motion. From the very personal standpoint of my own well-being and enrichment as well as because of the opportunities it has afforded me to help, even if in a small way, to increase understanding of others, I am grateful that physical education has been my life.

AMERICAN ACADEMY OF PHYSICAL EDUCATION
March 1979

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(85)

1. Affleck, George (1874-1958) (93)
2. Ainsworth, Dorothy (1894-1976) (72)
3. Anderson, W. G. (1860-1947) (39)
4. Arnold, E. H. (1865-1929) (14)
5. Bailey, Edna (1883-1973) (43)
6. Baker, Gertrude (1894-1977) (143)
7. Bancroft, Jessie J. (1867-1952) (8)
8. Bell, Margaret (1888-1969) (60)
9. Blanchard, V. S. (1889-1969) (61)
10. Bovard, John (1881-1966) (19)
11. Bowen, Wilbur P. (1864-1928) (9)
12. Brace, David K. (1891-1971) (41)
13. Braucher, Howard (1881-1949) (11)
14. Brightbill, Charles (1910-1966) (110)
15. Brown, John, Jr. (1880-1961) (23)
16. Burchenal, Elizabeth (1876-1959) (28)
17. Burdick, William (1871-1935) (3)
18. Champlin, Ellis H. (1892-1961) (111)
19. Collins, Laurentine (1898-1961) (62)
20. Cowell, Charles C. (1896-1963) (81)
21. Cozens, Frederick W. (1890-1954)
(32)
22. Daniels, Arthur S. (1906-1966) (120)
23. Duggan, Anne Schley (1905-1973) (47)
24. Duncan, Ray (1906-1967) (121)
25. Esslinger, Arthur A. (1905-1973) (82)
26. Forsythe, Charles (1899-1968) (122)
27. French, Esther (1908-1973) (112)
28. Halsey, Elizabeth (1890-1974) (83)
29. Hetherington, Clark W. (1870-1942)
(1)
30. Homans, Amy Morris (1848-1933)
(12)
31. Howe, Eugene C. (1883-1940) (36)
32. Hughes, William L. (1895-1957) (50)
33. Hunsicker, Paul (-1976) (160)
34. Hussey, Delia P. (1909-1970) (131)
35. Jack, Harold K. (1906-1972) (139)

36. Jones, Lloyd M. (1900-1973) (85)
37. Karpovich, Peter V. (1896-1975) (51)
38. Kilander, H. Frederick (1900-1968) (114)
39. Kozman, Hilda C. (1893-1977)
40. Lamb, Authur S. (1886-1959) (21)
41. Landis, Paul E. (1899-1975) (124)
42. Langton, Clair V. (1895-1973) (106)
43. LaPorte, William R. (1889-1954) (17)
44. Lloyd, Frank S. (1894-1957) (34)
45. Maroney, F. W. (1884-1958) (66)
46. Mayshark, Cyrus (1926-1976) (246)
47. McCloy, Charles H. (1886-1959) (27)
48. McCurdy, J. H. (1866-1940) (7)
49. McKenzie, R. Tait (1867-1938) (2)
50. McKinstry, Helen (1878-1949) (52)
51. Meredith, William (1896-1959) (97)
52. Messersmith, Lloyd L. (1905-1977) (161)
53. Meylan, George (1874-1960) (53)
54. Moulton, Gertrude (1880-1964) (55)
55. Nash, Jay B. (1886-1965) (5)
56. Norris, J. Anna (1874-1959) (24)
57. O'Donnell, Mary P. (1896-1961) (101)
58. O'Keefe, Pattric Ruth (1902-1959) (134)
59. Patty, Willard W. (1892-1962) (127)
60. Phillips, Marjorie (1909-1961) (135)
61. Phillips, Paul C. (1865-1941) (20)
62. Pritzlaff, August H. (1894-1975) (116)
63. Rath, Emil (1873-1943) (31)
64. Raycroft, Joseph M. (1867-1955) (55)
65. Reed, Dudley B. (1878-1955) (10)
66. Savage, C. W. (1869-1957) (18)
67. Schneider, E. C. (1874-1954) (25)
68. Schrader, Carl (1872-1961) (6)
69. Scott, Harry A. (1894-1972) (38)
70. Sharman, Jackson R. (1895-1957) (79)
71. Skarstrom, William (1869-1951) (58)
72. Smith, Julian W. (1901-1975) (117)
73. Stafford, Frank (1903-1951) (70)
74. Stafford, George (1894-1968) (108)
75. Stagg, Amos Alonzo (1862-1965) (71)
76. Starr, Helen M. (1902-1969) (118)
77. Stecher, William Albin (1858-1950) (13)
78. Steinhaus, Arthur (1897-1970) (29)
79. Storey, Thomas A. (1875-1943) (4)
80. Streit, William K. (1901-1971) (129)
81. Summers, James S. (1884-1949) (57)
82. Trilling, Blanche M. (1876-1964) (42)
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